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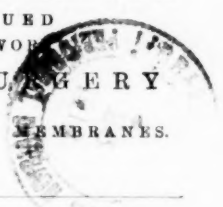

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Two Addresses
ON
WAR PSYCHO-NEUROSIS.

(I.) NEURASTHENIA: THE DISORDERS AND DISABILITIES OF FEAR

Delivered before the Harveian Society of London on Dec. 15th, 1917,

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MR. PRESIDENT AND GENTLEMEN,—When the secretary of this society did me the honour of asking me to open a discussion on neurasthenia I ventured to suggest that I should deal with the subject of war psycho-neurosis, which during the last three years or more I have had ample opportunity of studying.

The two important war psycho-neuroses are hysteria, or as Babinski terms it pithiatism, and neurasthenia. But before dealing with neurasthenia more in detail, it is well to define terms. In war psycho-neuroses it is difficult to separate neurasthenia from hysteria, for the sensori-motor phenomena of hysteria are so very frequently combined with the general symptoms of neurasthenia. The term neurasthenia implies nervous exhaustion, but as Dejerine states, in his great work on the "Functional Manifestations of Psycho-neuroses," nervous debility is not neurasthenia; and it would be well if the medical profession would accept his definition, for probably no term employed in medical science has been more loosely and inappropriately used than the term neurasthenia. It has been employed to cloak ignorance, to help deception, and to aid fraud. For instance, to avoid certification and to satisfy the scruples and susceptibilities of friends almost every form of insanity has been designated neurasthenia; again, under the Employers' Liability Act traumatic neurasthenia became a by-word for workman's compensation neurosis and pension neurosis, and now this great war has shown conclusively that the most severe injuries of the head and the spine and of the peripheral nervous system occur without any signs or symptoms of neurasthenia; in fact, if we want to find severe neurasthenia we should not go to the surgical wards. It is found, however, in those individuals who have been returned suffering with so-called "shell shock," but who exhibit not a sign of visible injury on the body, and of whom it may be said that in the majority of cases there is no evidence of commotional shock or concussion. Presently I will attempt to offer an explanation, but first let me give you Dejerine's subtle definition of neurasthenia, and later we shall see how closely it accords with the facts exhibited in cases of war psycho-neurosis.

Definition of Neurasthenia—Dejerine.—"Neurasthenia consists of the ensemble of phenomena which result from the *non-adaptation* of the individual to a *continuous emotive* cause and the *struggle* of the individual for this adaptation." Neural fatigue or nervous debility is neither neurasthenia nor hysteria. If to the phenomena of fatigue there is superadded a state of continued emotivity upon which may be grafted obsessing preoccupation, we are justified in diagnosing neurasthenia.

The points to which I wish to draw special attention, and which form the essence of Dejerine's definition, are *continued emotivity and preoccupation*, causing a *persistent condition of neural exhaustion*, and the phenomena resulting therefrom. Is neural exhaustion caused by using up neural energy? Or is it by interfering with the storage of neural energy? Or, finally, is it caused by interfering with the functions of the endocrine glands, or by a disturbance of their normal bio-chemical inter-relation reacting in the cerebro-spinal and sympathetic nervous systems? Probably all three factors conspire together to bring about neurasthenia.

THE PERSONALITY.

Every individual has a *personality* depending upon what he was born with and what has happened after birth; with regard to emotivity the inborn factor is all-important. Feeling tends to dominate reason, but in the well-balanced mind emotion and imagination are guided by reason and controlled by will.

My own experience now based on statistics proves conclusively that by far the most important factor in the genesis of neurasthenia is an inborn or acquired tendency to emotivity. The family and personal history of 100 cases of war psycho-neurosis without visible injury, compared with 100 cases of shrapnel, gun-shot, and other bodily injuries under the surgeon's care, show a striking difference in the comparative frequency of an inborn neuropathic, psychopathic tendency, and temperamental timidity in the two groups. Still this does not quite answer the question why the psycho-neuroses neurasthenia and hysteria should not be found among the wounded; for a great many soldiers with a neuropathic or psychopathic tendency must be returned suffering with wounds. We have then to consider how far the existence of the wound by its moral effect interferes with a particular mental preoccupation.

Among the prisoners of war there must be a large number of men who have an inborn or acquired tendency; nevertheless, hysteria and severe neurasthenia are seldom seen in prisoners' camps. According to Willmanns, among 80,000 prisoners in the camps of the 14th Army Corps there occurred but five cases of hysteria, including a single case of hysterical fright neurosis. He further calls attention to the fact that among 20,000 patients proposed for internment in Switzerland the army medical officers of the Exchange Commission found scarcely an instance of severe neurosis. The same held true of the Germans interned in Switzerland. Although neurasthenic, vaso-motor and similar disturbances were common enough, the severe neuroses of the shock and fright type were not observed. I am informed also that in the field hospitals at the front cases of hysteria and neurasthenia are not nearly so common as at the base hospitals.

Now, reverting to Dejerine's definition, and the importance he attaches to preoccupation, we have to consider how we can explain these facts. First, let us consider the effect on the mind of the emotion *Fear*. There is a considerable similarity in the signs and symptoms which are manifested by individuals of very different personality, suffering with war psycho-neuroses. Fear is a primitive emotion common to all human beings; it is associated with definite sensori-motor reactions for self-preservation—namely, the paralytic crouching attitude of immobility for concealment, or of the active reaction of flight or fight in which there is increased conversion of latent into kinetic energy. In the latter state, Cannon and Elliot have shown that there is a profound effect on the endocrine glands; notably there is a mobilisation of adrenalin with its reaction on the thyroid, its causation of a rise of blood-pressure and conversion of more glycogen into sugar for the production or muscular energy.

THE INFLUENCE OF DREAMS AND THEIR SIGNIFICANCE REGARDING PREOCCUPATION OF THE MIND.

Dejerine points out that the dream can even, in some cases, if it introduces into consciousness images sufficiently vivid, be considered as an emotive excitation, and when persistent and terrifying, as it is in the case of soldiers suffering with war psycho-neuroses, we may assume that there is a state of continuous emotivity.

Dreams occurring in a certain type of individual as a result of war experiences, and their continual revival in the imagination as the dreams indicate, show that there is always present in the subconscious mind a source of contemplative fear. The ideas which give rise to this contemplative fear may break through the threshold of consciousness when the attention is not diverted by the continuity in the chain of perceptual experiences and their association with the past whereby the personality adapts itself to the external world in the struggle for existence.

In dreams, when the perceptual relations of the body to the external world are dissociated, ideas of past war experiences are revived in consciousness with great vividness in the great majority of cases. The fact that some soldiers cannot recollect their dreams is no proof that they have not occurred. Kant ("Dreams of a Spirit Seer") said:—

"I rather suppose that ideas in sleep may be clearer and broader than even the clearest in the waking state, for man at such times is not sensible of his body. When he wakes up his body is not associated with the ideas of sleep, so that it cannot be a means of recalling this former state of thought to consciousness in such a way as to make it appear to belong to one and the same person."

We now know that soldiers who have these dreams of battle experience shout in their sleep, give orders to their men, and

thus bear out the observation and wisdom of Lucretius, who says:—

"To whatever pursuit a man is closely tied down and closely attached, upon whatever subject we have previously much dwelt, the mind having been put to a more than usual strain in it, during sleep we for the most part fancy that we are engaged in the same. Lawyers think they plead causes and draw up covenants of sale, generals that they fight and engage in battle, sailors that they wage and carry on war with the winds; we think we pursue our task and consign it when discovered to writings in our native tongue. So all other arts and pursuits are seen for the most part during sleep to occupy and mock the minds of men."

Many of the soldiers under my care have had no recollection of their dreams, but the fact that they woke up in a cold sweat or that the next morning they felt dejected was sufficient proof that they had been dreaming. In fact, many of them have been heard to shout in their sleep; some of these were mutes; a good few have gone through all the process of fighting with bombs, rifle, or bayonet, and yet have had no recollection of the pantomime of war which they have been enacting during their sleep. I think, therefore, there is sufficient evidence to prove that contemplative fear or terror has left a deep impress on the minds of these men and produced a continual state of fear emotivity.

OBSESSIONAL PREOCCUPATION.

The next point we have to consider is *obsessional preoccupation* in relation to the continuance of this emotivity and to other fears which may be termed anticipatory.

The war psycho-neuroses neurasthenia and hysteria do not differ in any essential from those met with in civil life, except that they are coloured and determined by war experiences, and the emotion of fear with its instinctive reaction for self-preservation, both of which play a dominant part. The dodging reflex and the startling reflex so commonly seen in soldiers suffering with "shell shock" neurasthenia afford a striking reminiscence of instinctive self-conservative reactions to the booming of shells or bombs.

PSYCHO-NEUROSES IN RECRUITS AND CONSCRIPTS.

An interesting and instructive report to the Medical Research Committee by Lieutenant-Colonel F.W. Burton-Fanning upon Neurasthenia in Soldiers of the Home Forces [1] clearly demonstrates the fact that large numbers of men in civil life in all grades of society carrying on their occupations are, when conscripted, the subjects of neurasthenia. Consequently this nervous affection is of great importance from a military point of view as a cause of loss of man-power to the Army. As the author remarks, numbers of these patients have spent far more time in hospitals and convalescent homes than with the units; it is therefore open to doubt whether it is worth while training such men for soldiers, as it would be more profitable to spend the money and energy in the manufacture of munitions.

Another fact which is brought home to all those who have had the care of cases of war psycho-neuroses is, that the signs and symptoms of hysteria and neurasthenia of men who have been to the front and have been invalided home (except those in which there has been definite evidence of cerebral or spinal commotion, burial or gassing) in no way differ essentially from the signs and symptoms of hysteria and neurasthenia of men who have never been out of England. I have seen both hysteria and neurasthenia arise from the fear of conscription or, having been conscripted, an hysterical crisis has occurred when it became known that the conscript would be in a draft for general service abroad.

Burton-Fanning found that the majority of cases of hysteria and neurasthenia owe their condition to an inborn temperamental neurotic disposition, which accords entirely with my own experience of recruits and of soldiers suffering from these nervous affections. Indeed, the inborn factor dominates, as a rule, in proportion to the failure to discover adequate cause of stress arising from military service. These conscripts, as Burton-Fanning says, disagree with the doctor's "Fit for Service." "They resent being found fit and bring certificates of their unfitness for which they are willing to pay considerable sums." Such cases give a typical proof of Dejerine's dictum by a continued emotivity and mental preoccupation concerning their unfitness.

In such a mental attitude, therefore, they start their military career under a cloud and find their comrades not over congenial. Many of the men, especially clerks, are quite unfit for hard training and suffer with mental and bodily fatigue, aggravated by insomnia and anxious mental preoccupation. They complain of the usual symptoms of neurasthenia—viz., tremors, fatigability by mental or bodily effort; loss of confidence and irresolution; hyperæsthesia, paræsthesia, and pains which they consider to be rheumatic; fainting attacks; præcordial pain and palpitation; feelings of dizziness; insomnia and dreams; loss of appetite and anorexia; headache and gastric troubles.

The relation of the genital functions to emotivity is well known, and in civil life sexual disorders, sexual abuse, and fears regarding impotence play an important rôle in the genesis of neurasthenia. I have not found a large percentage of officers and men sent home from the front suffering with neurasthenia who have been mentally preoccupied or who have complained of fear connected with the genital functions. In fact, they are few as compared with those seen in civil life.

The motor disorders and disabilities met with in war psycho-neuroses may be the outcome of instinctive reactions of fear; many of the hysteric motor paralyses and disabilities are, by popular metaphor, associated with fear. Thus "dumb with fear," "quaking with fear," "paralysed by fear" are motor phenomena; but the influence on the secretions and excretions is also signalised in popular metaphor and the vaso-motor reaction manifested by acrocyanosis is popularly expressed by "blue funk." Each individual reacts to emotions according to his personality and each physical reaction, whether kinetic, cardiac, respiratory, gastric, or genital, when exhibited for the first time, is subconscious.

THE PERSONALITY AND EMOTIVITY.

We may then ask, Is there any relation between the psychological disturbances and the psychical signs of disordered emotion? I have already shown that there is, as regards the external manifestations of the emotions of fear. But it also applies to the functions of all the organs of the body. Every part of the body is represented in consciousness, and a stream of stimuli from every structure and organ is flowing continually into the seat of consciousness, making us aware of our existence and constituting the *ego*. These stimuli were termed by Ribot "cœnæsthetic."

Consciousness of this bodily sensibility, unless our attention is directed voluntarily to some structure or organ, is only aroused when either the stimulus ceases to flow from some part of the body, or the stimulus is changed from the normal in its periodicity, rhythm, or intensity. The fields of perceptual consciousness which brings the *ego* into relation with the external world are correlated with the cœnæsthetic fields; consequently an emotive preoccupation concerning the particular functions of an organ or structure by inhibiting the normal automatic action determines a disordered function of that organ. For we know that any organ or structure which naturally or by habit performs its functions automatically becomes disordered in its functions when there is mental apprehension and preoccupation regarding the performance of that function. This is an every-day experience. So we can understand how a continued preoccupation regarding the function of an organ like the heart or the stomach, or indeed any organ of the body, of the perfect action of which we should be quite unconscious, becomes an obsession; for disordered function tends to repercussion in the field of consciousness, causing a continual conflict between reason and emotion for readjustment. Thus a vicious circle is liable to be established owing to the inherent state of emotivity of the neurasthenic.

PREOCCUPATION AND APPREHENSION.

I have yet to consider why it is that soldiers without visible injury should so frequently have this continued state of emotivity when far away from danger. I have already indicated that anxiety aroused by the fear of war experience will, in conscripts, lead to neurasthenia, and that this can only be cured by exemption from service. Likewise when men come back from the front suffering from shell shock the best tonic is to assure them *at once* that under the new system of categories they cannot be found fit for service for six months, and probably they will not be sent on general service again. Soldiers sent to convalescent hospitals owing to continuous

[1] THE LANCET, June 16th, 1917, p. 907.

apprehension of the future often return to hospital in a more neurasthenic state than when they went. I have noticed also a number of cases amongst officers and men who have come to our hospital, in which there has been a mental conflict and preoccupation regarding their honour and reputation as soldiers, and having no visible evidence to justify their return from active service, they are apprehensive lest their comrades should regard them as shirkers. If they had got a wound which disabled them there would be something to show, and they would have no fear or apprehension regarding estimation of their honour or justification for being invalided home. Owing to their neurasthenic condition they are unable to see things in their proper light.

Again, financial worry, domestic difficulties, and other fears of their future may add to the factors of mental preoccupation and neural exhaustion and hinder recovery. In respect to special organs being affected, the cardiac functions are most often disarranged; indeed, the majority of cases of what is called D.A.H. (disordered action of the heart) should be termed neurasthenia, for the knowledge of a neurotic individual that the diagnosis has been made of disordered action of the heart is liable to set up an obsessional preoccupation, causing præcordial anxiety, palpitation, and rapid action, which, reacting, intensifies the emotional disturbance and excites many of the distressing symptoms of this neurosis.

MANIFESTATIONS OF EFFECTS ON THE ENDOCRINE GLANDS.

Owing to limitation of time I cannot do more than briefly allude to the manifestations of effects on the endocrine glands in certain individuals. Many of the cases of neurasthenia have exhibited definite evidence of affection of the endocrine glands by the fact of increased blood pressure; rapid-acting heart; enlargement of the thyroid; von Graefe's sign; Moebius' sign and fine tremor. According to Crile, there is normally an inter-relation of the thyroid, the adrenals, and the brain, which constitutes the master-key to the automatic action of the body.

CONCLUSION.

In conclusion, while admitting that, from commotion or prolonged stress of war, a stable nervous organisation may develop an acquired emotivity; nevertheless, it seems that the psychogenic or auto-suggestive factor, acting upon a pre-war emotive brain, is the chief determining cause of war psycho-neurosis, and the neurotic patient's protest of anxiety lest he be boarded out of the service, or not allowed to go to the front, is really in many cases an indication of an exhausting conflict which has been going on continually in his mind between the self-conservative instinct and the moral obligation of duty and patriotism, which has its roots in the social herd instinct.

New Methods
FOR
THE STUDY OF EMIGRATION AND OF THE BACTERICIDAL EFFECTS EXERTED IN THE WOUND BY LEUCOCYTES.

BY COLONEL SIR ALMROTH E. WRIGHT, M.D., F.R.S., C.B.,
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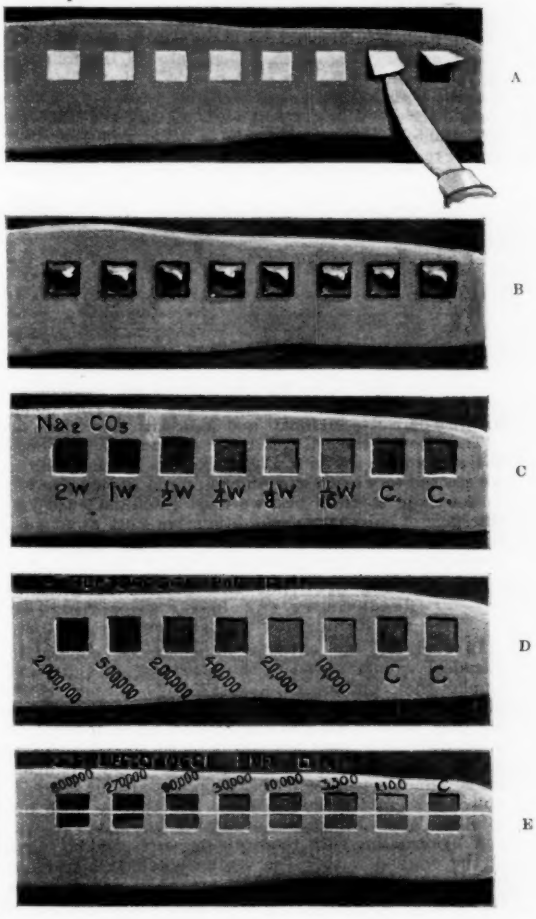
SOME ten years ago attention was drawn by Ponder[1] to the fact that when blood is allowed to clot in a cell built up with plasticine upon a microscopic slide the leucocytes emigrate and attach themselves to the glass. Later Emery observed that when a capillary pipette filled with blood is placed in the incubator the leucocytes come out of the clot and attach themselves to the walls. And I have shown[2] that when we centrifuge blood in "emigration tubes" the leucocytes make their way out from among the red corpuscles and climb up into the trellis of fibrin formed in the supernatant plasma. I have spoken of this emigration—which is clearly independent of chimiotaxis—as *eleuthero-tropism* or impulsion to free wandering. But clearly we might in these cases also conceive of the leucocyte as having an impulse to get into contact with, and attach itself to, any foreign body.

Our particular problems here, however, are problems not of "epistemic" but of "pragmatic science"—problems of how to go to work to sterilise war wounds by leucocytic agency.

Our first task must be to find out how to promote emigration from the blood. We want for this, in the first place, a technique for operating with equal volumes of blood disposed upon equal areas of glass surface. Shallow cells of fixed area for the reception of blood can be made by two methods. 1. We can paint very hot paraffin wax on to a moist glass slide; punch circles with a cork-cutter into the paraffin while it is still plastic, and prise out the discs when the paraffin has set hard (Fig. 4), afterwards polishing up the floor of the cells with a drop of xylol applied on a clean handkerchief. 2. If we want standard volumes of blood imposed on a standard area we provide ourselves with some squared paper—and the squares may conveniently measure 5 mm. each way; we cut up a strip of this paper into separate squares, letting these fall as we cut them upon a wet glass slide. Then draining off the excess of water we range the squares in a line, dry the slide with blotting-paper, and then press the paper squares down firmly upon its surface. In the meantime we have melted some paraffin, heating it till it just commences to smoke. Then, applying this with a rapid stroke of a large camel's hair brush, we cover up our paper squares. When the paraffin is firmly set we turn up the edge of our squares with the point of a knife and remove them, exposing the clear underlying surface of glass (Fig. 1 A.)

FIG. 1.



[1] THE LANCET, Dec. 12th, 1908, p. 1746.
[2] THE LANCET, 1915, i., 787.

FIG. 2.

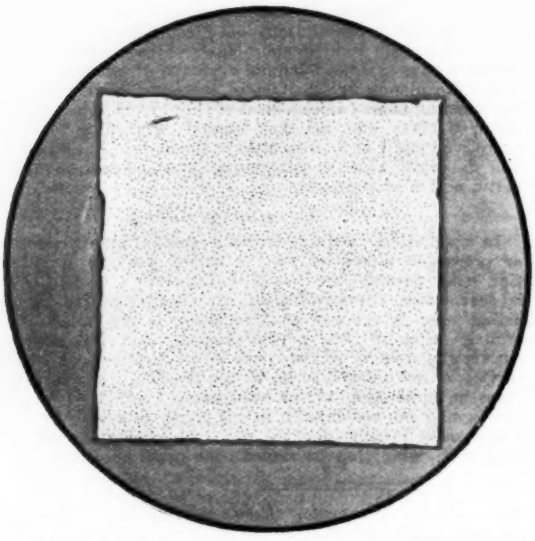
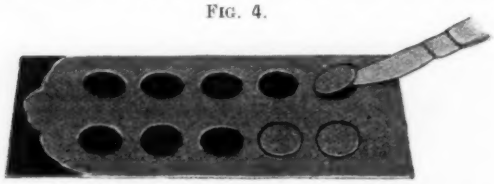


FIG. 3.

We have now on our slide a row of paraffin cells, each with a superficies of 25 square millimetres. This done, we take an ordinary capillary pipette, calibrate it with mercury delivered from "an automatic pipette,"[3] and then, drawing blood from the finger, impose upon each cell 25 c.mm. of blood, carefully leading that blood into all the four corners of the square. (Fig. 1 B.) Our slide is then placed in an incubator in a warm, moist chamber made by flooring a Petri dish with three or four folds of very wet filter paper. After 20 to 40 minutes the slide is withdrawn, the clots are gently removed, the escaped red blood corpuscles are washed

FIG. 4.



off from the floor of the cells with warm salt solution, or the preparation is simply held under the tap. This done, we fix with corrosive sublimate and stain with methylene blue.

The floor of the cell seen under a hand lens then presents the appearance shown in Fig. 2; and under the microscope we see the very interesting moving forms depicted in Fig. 3. To see these at their best we must catch the leucocytes at the stage of most active emigration; we must avoid washing in cold water; and the fixative must be applied to our specimen as quickly as possible

METHODS FOR STUDYING THE EFFECT OF CHEMICAL REAGENTS IN THE BLOOD UPON THE EMIGRATION OF LEUCOCYTES.

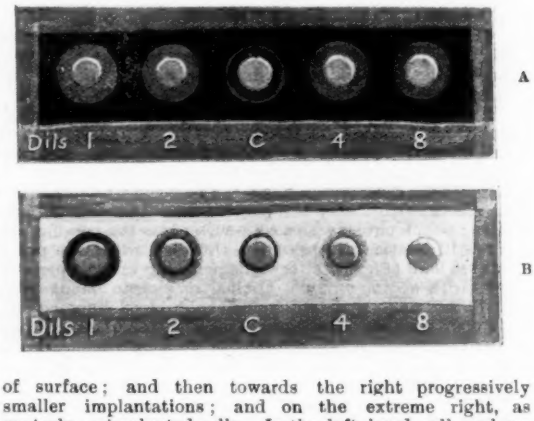
In studying the effect upon leucocytic emigration of chemical agents added to the blood we shall do well to employ the "method of washes." We fill our capillary pipette with blood up to the fiducial mark upon the stem; we then draw in an air-bubble; then fill up to the fiducial mark with our reagent; expel this; and then, by sucking in and blowing out, mix our blood with the wash left upon the walls. Such a wash will correspond to about 1/25th of the unit volume of the fluid. When less than a wash of our solution is to be added, we make graduated dilutions; and by operating with these obtain corresponding fractions of the original wash. The results obtained by adding to 25 c.mm. of blood two washes, one wash, and a series of fractions of a wash of N/3—i.e., approximately 5 per cent. solution of sodium carbonate—are shown in Fig. 1 C. It will be seen that there was obtained with 1/8th wash of our solution (i.e., by the addition of 1/8th of 1/25th of a 1/20 solution = 1 in 4000 of carbonate of soda added) an emigration very much greater than that obtained in the control blood. This result is obtained with quantities of sodium carbonate ranging down to 1 to 6000 to 1 in 8000, and the result is, as experiments by my colleague, Captain L. Colebrook, have shown, obtained also when we inject intravenously in man.

With 1/6th of a wash of saturated (i.e., 36 per cent.) sodium chloride solution (i.e., by the addition of 1/6th of 1/25th of 36/100 = a 36/15,000 or 0·24 per cent. solution) we obtain also a very striking increase of emigration.

METHODS FOR STUDYING THE CHIMIOTACTIC EFFECTS EXERTED BY BACTERIAL CULTURES.

For investigating the chimiotactic effects exerted by microbes we take our paraffin cells, and impose upon them graduated dilutions of bacterial culture, or, as the case may be, of a vaccine, spreading out in each case 10 c.mm. upon the 25 square millimetres of glass surface. We then evaporate to dryness in the incubator. Upon the cells thus prepared we impose our 25 c.mm. of blood, and proceed as before. A typical series of results are shown in Fig. 1 D. We have here, beginning at the left hand of the specimen, an implantation of 2 million streptococci per square millimetre

FIG. 5.

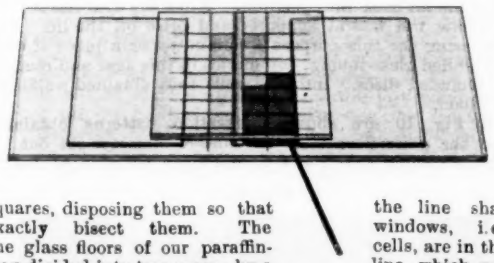


of surface; and then towards the right progressively smaller implantations; and on the extreme right, as controls, unimplanted cells. In the left hand cell we have no emigration; we have then from left to right more and more emigration; until, in the cell implanted with 10,000 streptococci per square millimetre, we achieve emigration equal to the controls; and in the cell implanted with 3300 streptococci per square millimetre, augmented emigration

[3] Vide the author's "Technique of the Teat and the Capillary Glass Tube," Constable, London.

Fig. 1 E shows a method of procedure in some respects better—the method of subdivided cells. Here before constructing our paraffin cells we have drawn a line with a glass-cutting knife longitudinally down the middle of the slide, and have pencilled in this line with a coloured grease pencil. Upon this we range our paper

FIG. 6.



squares, disposing them so that the line shall exactly bisect them. The windows, i.e., the glass floors of our paraffin-cells, are in this way divided into two panes by a line which will confine fluid. Upon the upper panes we now impose in series graduated dilutions of bacterial culture or vaccine, keeping the lower panes clear. We use, of course, for the implantation of our half-squares only 5 c.mm. of fluid, and when we have dried off in the incubator we fill into each cell, as before, 25 c.mm. of blood. Besides providing us with better positioned controls, this method brings into view ladder-ways. We use for this purpose a dissepiment made by rolling out a small pellet of plasticine between a microscope slide and the laboratory bench. Finally, we bridge over the double ratline thus obtained, converting it into a double cell. We use as the body of our bridge a large cover-glass or a piece of glass slide; we support it on either side upon a *thick* cover-glass fastened down with vaseline; and we use as our central support and partition our roll of plasticine. One of the two compartments we now fill in with the patient's blood; and the other with our own to serve as a control (Fig. 6), and then we incubate in a warm, moist chamber for from ½ to ¾ hour.

In Fig. 7 we have a comparison instituted by this method. It is a comparison between the author's blood as a control, and the blood of a colleague who had received an inoculation of staphylococcus vaccine for the treatment of boils. Upon the left is the blood of the patient, upon the right the control blood; and in each case, as explained above, we have upon the external ladder-ways the emigration on the unimplanted compartments; and upon the internal ladder-ways the emigration on the implanted compartments—the bacterial implantation being lighter as we proceed from above downwards. It will be seen, in connexion with the normal blood upon the right, that we have an inhibition of emigration into the more heavily implanted compartments, and a negative induction effect in the adjoining unimplanted compartments. On the left in the patient's blood, we have positive chimiotaxis into the upper more heavily implanted compartments. Further, we see on comparing the two

FIG. 7.

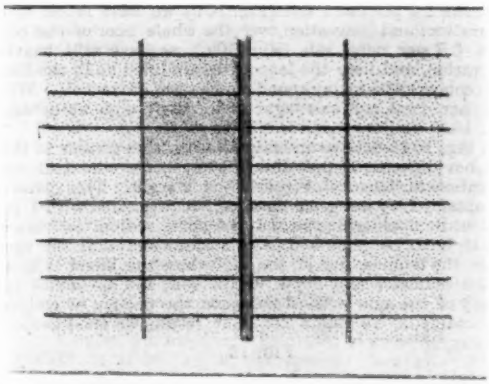
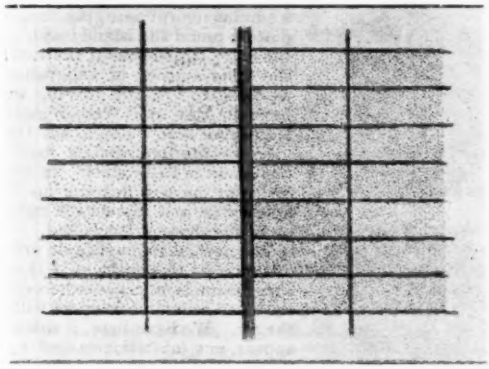


FIG. 8.



"negative" and "positive induction effects." In the cell on the extreme left, emigration is restrained not only over the implanted half-square, but also over the whole of the other half. In the next cell we have again a negative induction effect, but the restraining influence extends only a little distance into the lower half-square. Further along the line of cells, we have what we may call "*the reaction of indifference*"—i.e., emigration is equal on the implanted and unimplanted half-squares. And, finally, in the upper half-square of the fifth cell we have positive induction. That is, leucocytes which would in the ordinary course have emigrated on to the unimplanted half-square have here diverted to the implanted half-square.

It will be plain to consideration that we have here a method for procuring information with regard to the chimiotactic quality—i.e., toxicity—of vaccines; and the chimiotactic response—i.e., the attacking power—of a patient's leucocytes.

The "method of subdivided cells" points the way to another development—*the Method of Ratlines*. Here we rule upon a microscope slide with a glass writing pencil a system of parallel longitudinal lines; and then intersect these with vertical lines in such a way as to form a wide centre ladder-way, flanked on either side by a narrower one. We now impose upon the compartments of the central ladder-way from above downwards progressive dilutions of a vaccine or bacterial culture—sucking these off with a capillary pipette (drawn out into a filiform end) so as to leave behind only a wash of the fluid. This done, we divide the centre ladder-way into two narrower external unimplanted stairways, that there is more emigration from the patient's than from the control blood. This stands in relation with the circumstance that the patient had a leucocytic count of 10,900 per c.mm.

In Fig. 8 we have a comparison between the blood of a wounded man suffering from heavy staphylococcus septicæmia and the blood of a healthy laboratory worker. The patient's blood is on the right, the control blood on the left—the disposition being in all other respects the same as in the last case. It will be seen at a glance that we have

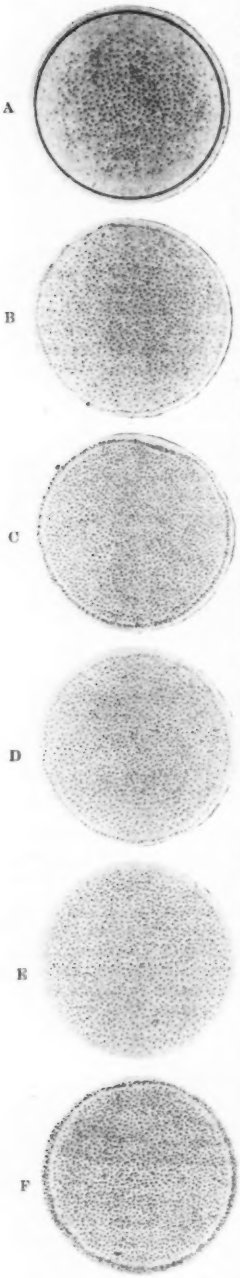
FIG. 9.

enormously greater emigration from the patient's blood. The leucocytes of his blood counted 20,000 per c.mm. Further, we see when we compare the emigration of the patient's blood into the implanted compartments with the emigration of the normal blood into the corresponding implanted compartments, that the patient's leucocytes have confronted a much heavier implantation.

Again, another procedure for the study of emigration is illustrated in Fig. 5. We have here upon a microscope slide a series of paraffin islands, made by conveying small loopfuls of melted paraffin to the slide and then

melting. Round each of the islands is a circle—imprinted from paraffined paper with a cork-cutter—and disposed after the fashion of an atoll. The atolls of islands 1, 2, 4, and 5 are implanted by the same technique as in the case of the ratlines with a wash of a suspension of microbes—the thick suspension employed being, of course, progressively diluted from 1 to 5. The atoll of island No. 3 is left unimplanted to serve as a control. The marginal area of the slide is then brushed over with melted paraffin, leaving the central part free. This is then flooded with blood—this coming right up to but not overflowing the paraffin islands.

FIG. 10.



The pattern of emigration obtained is shown in Fig. 5 B. All that area of the slide which was flooded with blood and lies outside the atolls is covered in with an even deposit of leucocytes. In the interior of the atolls the conditions are in each case different. In the first the glass is completely bare of leucocytes; in the second we have a narrow zone round the island completely bare and the rest covered sparsely with leucocytes. In the third—i.e., in the control—atoll, we have a similar zone of bare glass immediately round the island; and, in the outlying portions of the atoll, the same amount of emigration as outside. In the fourth, we have in the atoll rather more leucocytes than outside, but the narrow zone immediately round the island is still visible. In the fifth, we have a heaping up of leucocytes, and these come right up to the shore of the island.

The new fact brought into prominence by this method is that emigration is checked wherever the blood comes into contact with the air. We have here, it would appear, not inhibition caused by the exposure to oxygen, but inhibition caused by desiccation. For when we repeat our experiment under anaerobic conditions we obtain the same amount of marginal inhibition round the paraffin islands. The same zone of marginal inhibition is seen also when we impose blood upon paraffin cells, and fail to make proper provision against desiccation. And marginal inhibition is always more pronounced when we make to the blood any addition which brings up its salt content. The practical lesson we learn from these experiments is that the emigration of leucocytes from wound surfaces will be inhibited as soon as these begin to get dry.

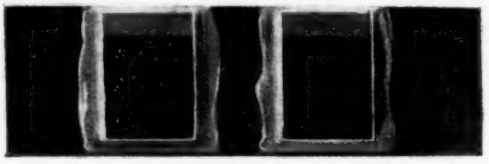
METHODS FOR STUDYING THE CHIMIOTACTIC EFFECTS EXERTED BY SOLUBLE SALTS.

For the study of chimiotactic effects exerted upon leucocytes by chemical agents which are readily soluble, other methods than those described above will be required. When working with readily soluble chemical agents we must guard against direct mechanical admixture with the blood, and must arrange for a gradual diffusion of the agent into the clot. We can achieve this by using agar as an excipient, and filling our blood into cells cut out in tablets of this agar.

A convenient procedure is the following: We mix our reagent with a 2 per cent. water agar, and then cast this agar, into tablets of standard thickness, in moulds constructed out of a pair of microscopic slides held apart at the ends by pieces of slide measuring 1, 1·5, or 2 mm. in thickness. We push the slide which forms the lid of this mould a little away from us, pour in our agar, and then bring the lid back into position. When the agar has set we withdraw the lateral supports and prise off the lid. We now, using for this purpose a cork-cutter or a piece of very thin-walled glass-tubing, cut circles in this agar and remove the included discs. Into the cells thus obtained we fill in our blood.

In Fig. 10 are shown emigration patterns obtained upon the glass floor of cells 7 mm. in diameter cut out in agar containing 2·8, 1·4, 0·7, and 0·35 per cent. of NaCl,

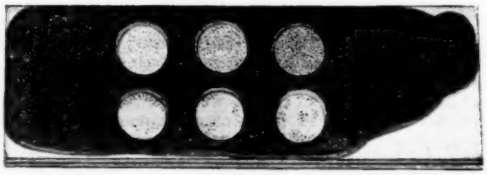
FIG. 11.



and water agar respectively. It will be seen in Fig. 10 A that with 2·8 per cent. salt agar we have sparse emigration, and emigration confined to the central area of the cell. With the 1·4 per cent. salt (Fig. 10 B) we have much more emigration, and emigration over the whole floor of the cell. With 0·7 per cent. salt (Fig. 10 C) we have still heavier emigration, and here the leucocytes are lined up in the form of a concentration ring round the margin of the cell. With 0·35 per cent. of salt agar (Fig. 10 D) and water agar (Fig. 10 E) we have again less emigration.

In Fig. 10 F we have an emigration pattern similar to that in C, but differing in that there is much more marked concentration of leucocytes round the margin. This pattern was obtained by using an agar cell impregnated with 1 per cent. sodium chloride and 0·1 per cent. sodium carbonate And it is to be remarked in this connexion that the time factor, the temperature of the cell when the blood is filled in, the diameter and depth of the cell, and no doubt the density of the agar will all influence the pattern of emigration obtained. To obtain constant results we must keep to

FIG. 12.



a definite time limit, must warm up the cell beforehand in the incubator, and must work with a cell of standard dimensions made out of the same agar.

We can vary our procedure by conducting our experiments in "emigration boxes" (Fig. 9). We build these up out of three elements—a slab of agar, 1 mm. thick, for the floor; a middle, 2 mm. thick, perforated agar or paraffin slab for the body of the box; and a 1 mm. thick slab of agar—or, as the case may be, a piece of glass slide—for a lid. For filling in with blood we dispose the lid as shown in the figure, and as we fill in gradually sliding it over the mouth of the cell.

It will be found, on taking to pieces such a cell and examining the slabs of agar under the microscope, that leucocytes emigrate after incubation quite freely on to the surface of agar—provided, of course, that this contains an appropriate quantity of salt. By employing for the roof and floor of our emigration box slabs of agar with different salt concentrations we can find out which is the more congenial to leucocytes. The naked-eye appearances are, however, deceptive, for emigrated leucocytes very easily come from an agar surface, and there remains behind a film of fibrin which shows up to naked-eye observation.

We pass now from methods which have reference only to the emigration of leucocytes to methods for measuring the bactericidal effects exerted by the emigrated leucocytes. Here two points must be kept clearly in view. First, that—to avoid confusing results due to a bactericidal action of the serum with results due to the bactericidal action of the leucocytes—we must go to work with definitely serophytic bacteria, such, for instance, as streptococci and staphylococci. Secondly, we must make provision for the effacement of all dead spaces—i.e., all hollow spaces in which microbes would be safely out of reach of the leucocytes. It will be obvious with respect to this last requirement that it can be fulfilled only by disposing our leucocytes and microbes upon apposed flat surfaces. One method will be to impose a slab of implanted nutrient agar upon a glass surface covered with living leucocytes. The other—and this more closely imitates the bringing together of the surfaces of a wound—is to take two surfaces covered with living leucocytes, one of glass and the other of nutrient agar; and then, having infected both, to bring the surfaces togetner so as to combat the infection by leucocytic attack from the two sides.

If we employ the former method, we fill our blood into open agar or paraffin cells; incubate; and then, after lifting off the framework of the cell and then the blood clot, impose upon the leucocyte-covered floor and surrounding surface a slab of agar implanted with microbes. We employ, of course, a series of such agar slabs implanted with successive dilutions of our culture. We then, after ringing round the edges of our slabs with melted vaseline or paraffin, and covering in with a slide, incubate over-night, and compare the number of colonies which come up in the central and peripheral areas of the field. A typical result is shown in Fig. 11.

Where two layers of leucocytes are to be brought to bear upon the bacterial infection we collect our leucocytes upon the glass floors and agar lids of emigration boxes; or we use in pairs open boxes floored the one with glass and the other with agar. In either case before inverting our agar slabs upon our glass slides—leucocyte-covered on leucocyte-covered area, and bare upon bare area—we wash off red blood corpuscles and make our microbic implantation by irrigation with serum to which we have made graduated additions of microbes.

Instead of using, as just described, the outlying portions of our field to serve as controls we can, as in Fig. 12, use separate agar slabs.

Finally, attention may be drawn to an all-important principle to which all the foregoing leads up. When the surgeon seeks information from the bacteriologist as to whether the wound is making progress in sterilisation, and whether secondary suture may or may not be undertaken, the bacteriologist is wont to take the pus and plant it out in such a manner as to secure the survival of the microbes and the destruction of the leucocytes. In other words, the bacteriologist is wont to make what I may call a "*necro-pyo-culture*." And then the surgeon, when he undertakes the secondary suture, very often obtains a result much more favourable than the findings of the bacteriologist would appear to warrant.

If he wants to be a help to the surgeon, the bacteriologist should change his procedure. Instead of making films and *necro-pyo-cultures*, and reporting the number of microbes seen or rescued alive from the pus; he should make *bio-pyo-cultures*—i.e., provide in his cultures conditions favourable to phagocytosis, and should then report whether the leucocytes on the wound surface—assuming that the surgeon gives them a fair chance by effacing dead spaces and surface desiccation—are competent to get the better of the remaining bacterial infection.

In conclusion, I have to express my indebtedness to my fellow-workers—Captain Alexander Fleming and Captain Leonard Colebrook—for much valuable assistance in the working out of these methods, and to Sergeant A. K. Maxwell for much help in preparing the illustrations.

HOSPITAL SUNDAY FUND AT PLYMOUTH.—Oct. 21st, 1917, was observed in the "Three Towns" as Hospital Sunday, and as a result the sum of £590 has been handed to the South Devon and East Cornwall Hospital, Plymouth.

A METHOD OF SPLINTING GUNSHOT FRACTURES.

BY W. H. JOHNSTON, B.A., M.D., CH.B. EDIN.,
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AND
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THE following series of apparatus for the treatment of fractures of war have been used by us for some considerable time, and the results obtained by their use have been so satisfactory that we now publish them in the hope that others may find them of value.

The various splints have been made in the ordinary workshop of a general hospital from bars of aluminium which are supplied from base medical stores.

The principles adopted have been those of Thomas and Jones, and a few of the splints are modifications which we have found advantageous of the Jones's models. In constructing them we have aimed at the following points:—

1. Wide and easy access to the wound and fracture area.
2. Continuous immobilisation of the fracture area.
3. A splint enabling the patient to be up and about whenever his general condition permits.
4. A splint by means of which the alignment will be such as to give the best functional and anatomical result, and in several cases a starting-point for after-movements.

Several fractures necessitate the limb being in the abducted position, and to obtain this in an ambulatory type of splint some form of body grip is necessary from which to build up the support for the arm. The one we have used consists of an aluminium bar shaped round the shoulder of the affected side and coming down to the anterior superior spine of the opposite side in front and to a corresponding point behind. The ends are then joined to a semi-girdle round the same side by means of rivets. Besides being the basis for construction this grip forms the medium for counter-extension.

A short description of the method of construction and application is given under each splint. In their application it is, of course, necessary for any bar coming in contact with the body to be well padded.

Upper Arm Splint for High Open Fractures of the Humerus.

A hoop aluminium is fitted closely over the wounded shoulder, lying into the side of the neck, and coming down to the opposite anterior superior spine in front, and it is carried down to a corresponding point behind. The free ends of the loop are joined together by a semi-circular band encircling the same side and gripping it just above the iliac crest. This constitutes the "counter-extension grip," and the rest of the apparatus is built up from it. From the points of the greatest convexity of this grip (the upper arm being carried out from the body) bars are carried to a point about 4 inches beyond the elbow tip, and there joined by a vertical upright. To this out-structure a forearm rest is built, as in the accompanying diagram, and supported by a stay to the medial end of the abdominal hoop. (Fig. 1.)

Application.—The forearm, by means of supports and bandages, is firmly fixed in the forearm rest, which acts as a fulcrum, against which extension acts. This is applied (1) directly from the lower end of the shaft of the humerus by adhesive, &c.; or (2) from the upper third of the forearm by suitable methods. The prolongation beyond the elbow constitutes the end of the splint upon which the pull is always taken. It will here be observed that the whole of the shoulder—the axilla—and the upper of the chest wall are absolutely exposed and unencumbered in any way. Room is allowed for placing counter-incisions in those places where, with this injury, pocketing and tracking of pus usually occur—i.e., in the axilla, down the side of the chest wall, or at the posterior border of the deltoid.

Apparatus for Open Fractures of the Lower and Middle Thirds of the Humerus (Modification of Jones's Arm Splint).

This splint is used only in cases where there are no wounds in the axilla or around the shoulder. It differs from the Jones's splint in the following respects: (1) The bars coming from the axillary counter-extension grip are placed anterior and posterior relative to the upper arm and not medial and lateral; (2) the upper arm bars are placed about

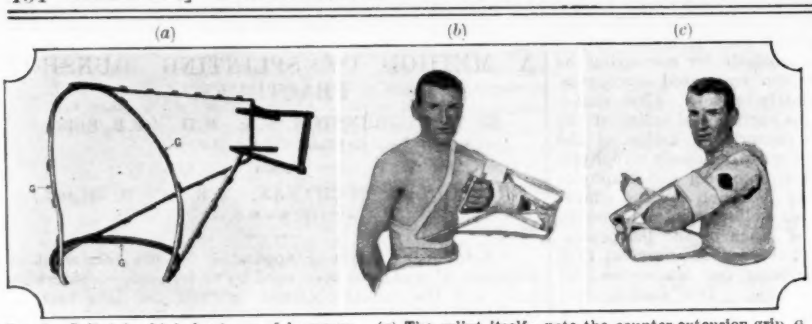

FIG. 1.—Splint for high fractures of humerus. (a) The splint itself; note the counter-extension grip, G, and the forearm-rest. (b) The splint applied. (c) Showing shoulder exposed.

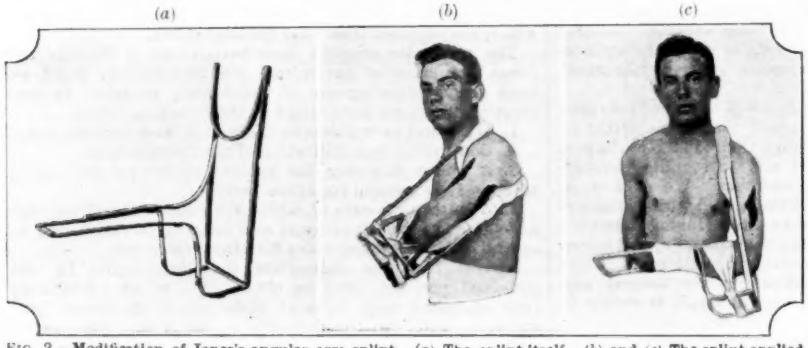

FIG. 2.—Modification of Jones's angular arm splint. (a) The splint itself. (b) and (c) The splint applied, showing arm exposed.

8 inches apart; (3) the frame upon which the extension pull is applied is wider and allows of the extension being applied to the upper third of the forearm.

To keep the arm out from the body and to carry the forearm into its position a curved bar is riveted from the upper end of the posterior bar to the inner bar of the forearm-piece.

Extension may be applied (1) if the wounds permit, directly from the lower third of the humerus, by adhesive, Sinclair's glue, &c.; (2) from the upper third of the forearm by a broad bandage, &c., as shown in the accompanying photograph. Counter-extension is gained against the axilla. The wrist, which is fixed, again acts as the fulcrum; the elbow is the moving point and the force being applied as directed.

This splint affords easy and adequate access to the whole length of the humerus, and immobilisation need never be lost during dressings. (Fig. 2.)

Modified Middledorf Splint for Open Fracture of the Humerus.

Here the principle is the same as in the old wooden type. The splint consists of light bars adjusted to fit the side of the trunk, the lowermost curved bar resting just above the iliac crest. The splint takes the form of a triangle, towards the outer apex of which the elbow projects. The splint is first fixed firmly against the side, and secured there by a broad body binder. The wrist and hand are next fixed by any convenient method, and extension is applied to the upper third of the forearm, making the elbow the moving point and the wrist the fulcrum. Extension may be applied directly to the upper arm. This splint is suitable in cases of fracture of the humerus where there are large wounds on the posterior aspect of the arm. (Fig. 3.)

Excision of the Head of the Humerus.

For the treatment of this condition the arm has usually been abducted at right angles from the side, and placed in the straight splint of Thomas.

In many cases no splint of any kind is used, the arm being allowed simply to hang by the side, the forearm being supported. In combating the sepsis free access to the axilla, which frequently has to be drained, is a necessity. In many cases posterior drainage of the joint necessitates placing incisions along the border of the deltoid. The whole shoulder area, therefore, must be exposed. We prefer to treat such cases with the arm in a position of almost complete abduction with slight flexion. In constructing this splint to hold the arm in the required position the same body framework is used as in the splint for higher fractures of the humerus—i.e., the "counter-extension grip," from which is built up a light supporting structure in which the upper extremity lies, the forearm being flexed and the upper arm abducted from the side. Obviously no extension is wanted here. The position is one of rest, and at the same time it is an excellent position from which to commence those later movements which are so essential to a good result. (Fig. 4.)

Elbow Splint (for Wounds of the Elbow-joint, &c.).

In constructing this splint the idea of Jones of exposing the elbow whilst fixing the upper and lower arm has been elaborated. The modification shown in the photograph is made of aluminium. We have carried the upper-arm bars right up to the shoulder and connected them with a curved axillary piece. The forearm portion of the splint is designed to grip the lower third of the forearm and wrist and to provide a support for the hand. The whole of the elbow area, including the lower third of the humerus and the upper third, or more, of the forearm, is exposed by curving hoops

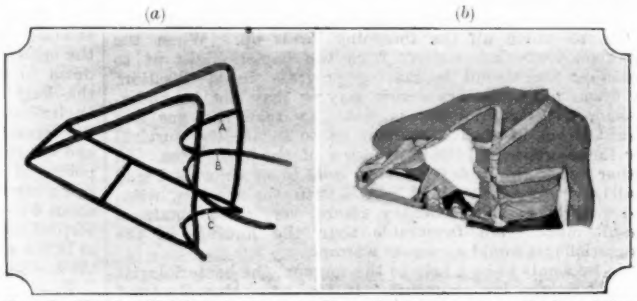

FIG. 3.—Modified Middledorf splint. (a) The splint itself; note A, the loop below axilla; B, the loop above iliac crest; C, the loop round the trochanteric level. (b) The splint applied.

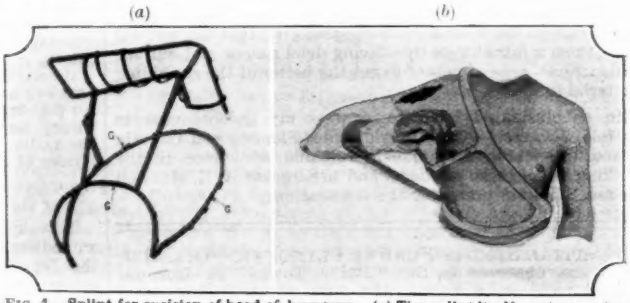

FIG. 4.—Splint for excision of head of humerus. (a) The splint itself; note counter-extension grip, G. (b) The apparatus applied.

in the manner indicated in the accompanying photograph. In applying this splint care must be taken that it is pushed well into the axilla in order to make the elbow more prominent and to stand out from the upper bar of the splint. The whole arm in this splint may, at a dressing, be lifted out from the side; the dressings over the elbow may then be removed and a kidney tray inserted on the under aspect of the joint to catch the irrigating fluid. After the dressings are reapplied extra stability to the joint can be secured either by bandages or by strips of adhesive plaster. It secures also the whole-time immobilisation of the joint. The forearm in this splint is held midway between supination and pronation. (Fig. 5.)

Forearm Splint: Fractures of Radius and Ulna.

The forearm being in the supinated or semi-pronated position a rectangular frame is built over it and carried along the upper arm into the axilla, care being taken that the forearm bars are sufficiently wide apart to give easy access for dressing the arm. Fixed to the skin side of the posterior bar of the upper arm-piece is a small zinc cup which receives the triceps comfortably. The lower bar of the forearm-piece is kept well away from the under surface of the forearm up to the wrist. It is essential that the upper arm-piece be not too long, otherwise the forearm will not rest midway between the bars. Dorsiflexion of the hand at the wrist can conveniently be obtained in a very simple and effective manner by introducing an elevated hand-piece across the bars, against which the palm of the hand rests.

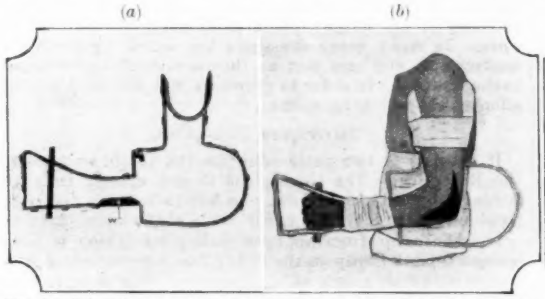

FIG. 5.—Splint for elbow-joint fractures, &c. (*a*) The splint itself; note W, wrist-cup. (*b*) The splint applied.

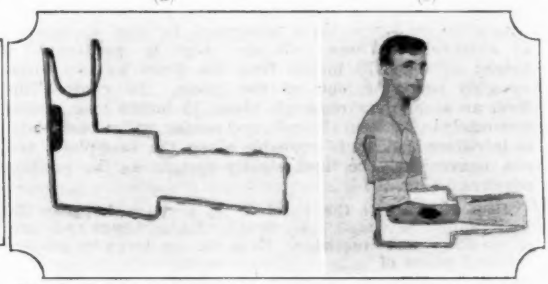

FIG. 6.—Splint for fractures of forearm. (*a*) The splint itself; note C, cup for triceps. (*b*) The splint applied.

Application.—Fix the upper arm into the posterior bar and metal cup by means of bandage or straps, after having seen that the splint is well tucked into the axilla. Taking as much skin surface as is compatible with the size and extent of the injuries, extension by some adhesive material is then applied to the distal end of the forearm and carried to the end bar of the splint. If the forearm shows any tendency to drop it can be held up by flannel supports and can be further steadied by means of adhesive plaster encircling the forearm bars. If care is taken in dressing the arm the permanent fixing need not be contaminated, and absolute immobilisation is thus continuously secured. (Fig. 6.)

A Method of Building Out a Forearm Splint from the Body.

A modification of the previous splint can be made upon the following lines in case there are also injuries to the upper arm as well as the forearm. Again, we have a rectangular frame fitted widely to the forearm and carried only half-way up the upper arm. The free ends of these bars are then connected by a semicircular piece with a cup in front of the biceps. In order to keep the splint out from the body, it is connected by stays to a semicircular hoop which embraces the abdomen and rests just above the iliac crests. Further stability can be obtained by using the "counter-extension grip" employed in design 1. Extension is then applied as in the foregoing splint. We have found it a great advantage, occasionally, to treat the forearm in this position. (Fig. 7.)

Apparatus for Wounds of the Hands With or Without Bony Lesions of the Carpus or Metacarpus.

It is advisable in most cases that the wrist be in a position of dorsiflexion. The splint we have adopted is made of the same malleable material as in the others. We have made the forearm-piece extend round the elbow so as to grip the lower third of the upper arm. The splint closely fits the forearm to within 2 inches of the wrist, the bars then diverge in a wide dorsiflexed circle. Counter-extension is secured against the biceps. (Fig. 8.)

Application.—Fix the upper arm firmly in the splint and bandage securely the forearm in between the bars. Extension by means of adhesive plaster, or gauze applied with Sinclair's glue, is fixed to the fingers individually, and carried out to the rim of the splint, as seen in the accompanying diagram. Easy access is obtained to the hand and at the same time the hand is firmly fixed in the dorsiflexed position. If one of the fingers has been involved, it should be allowed to drop towards the palm and extension should be applied to it from a metal or wooden bar fixed in the required position from the rim of the splint. This is in order to have the finger in the best possible position for gripping, in case of ankylosis at one of the phalangeal joints. Perhaps the most commonly used splint hitherto for hand injuries has been the metal hand splint of Jones. This splint is quite unsuitable where extensive wounds exist. It is difficult to maintain in the correct position, and it has to be removed at each dressing, with the inevitable result already mentioned.

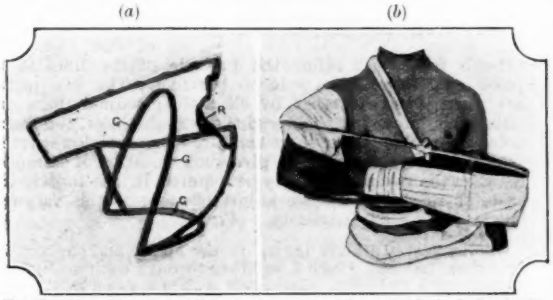

FIG. 7.—Apparatus for holding the forearm out from the body in fractures of the forearm (viewed from behind). (*a*) The splint itself; note G, counter-extension grip; R, rest for biceps. (*b*) The splint applied.

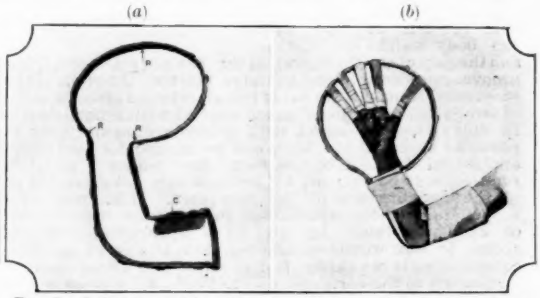

FIG. 8.—Splint for wrist and hand. (*a*) The splint itself; note R, the dorsiflexed ring; C, cup for biceps. (*b*) The splint applied.

Leg Splint (Modification of Page and Thomas).

This apparatus embodies the principles of Page and Thomas. The leg is suspended by supports in a position parallel with the bed and about 8 to 10 inches above it (Page). Counter-extension is exerted against the belly of the hamstring muscles, while direct extension, applied to the lower leg, takes the pull to the end of the splint (Thomas).

It consists of a light wooden base-plate about 3 feet long and about 1 foot wide, which rests flat upon the bed. At the upper end is an upright wooden cross block 9 inches high, hollowed out to receive the lower end of the thigh, and stretching from the proximal side of this block is a short inclined plane against which the thigh rests. Through the block two light iron rods 10 inches apart run to the end of the wooden base-plate, and are there connected for the application of extension. These rods are kept in position at a height of some 10 inches from the plate by two distal uprights near the end of the plate. To control the foot, an aluminium rectangle about 18 inches long, fitting accurately in between the rods, and resting on the base-plate, is introduced. This is moveable along the base-plate, and can conveniently be fixed rigidly upright as the position requires. (Fig. 9.)

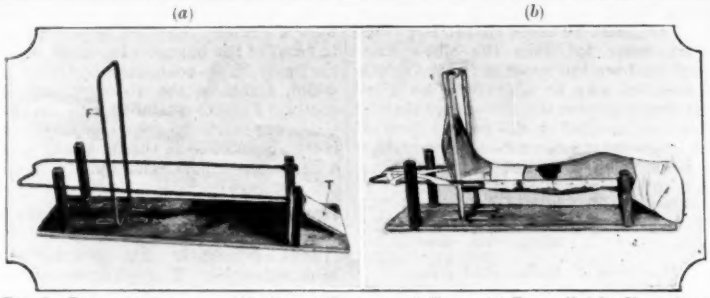

FIG. 9.—Leg apparatus; a modification of Thomas and Page. (*a*) The splint itself; note F, adjustable foot-piece; T, thigh-rest. (*b*) The splint applied, with aluminium foot-piece controlling foot.

Application.—Lift the leg into its position between the longitudinal bars and support it by flannel bands or by any of the other usual methods. Next, fix the thigh by passing a broad piece of adhesive strapping around it and under the inclined plane. Before doing this a soft pad may be introduced between the inclined plane and the thigh. Extension is then applied to the lower third of the leg and the pull is taken upon the end of the splint. The counter-extension consists of the body weight and the grip of the thigh against the inclined plane and hollow groove, reinforced by the adhesive plaster. The foot is then suspended from the top bar of the aluminium piece by means of strapping, or strips of gauze applied with Sinclair's glue. In doing this one broad strip should commence over the posterior aspect of the heel, and be carried forward closely applied to the sole of the foot. Any tendency to lateral rotation may be checked by strips of strapping carried out to the upright bars of the foot-piece. This method of suspending the foot eliminates any pressure over the heel or upon the tendo Achillis. The apparatus gives easy access to any wound of the leg, and allows of as much extension as is required. It does away with all necessity for discomfort to the perineum and buttock. With gross wounds of the leg even without fracture, where irrigation methods are employed and where access is required, this splint is very useful. It can also be used very conveniently for wounds of the ankle and foot. If much injury to the foot exists, suspension may be obtained by means of gauze and Sinclair's glue applied to the great toe only. Where for reasons it is necessary to apply direct axial traction on the limb with Chutro's stirrup, the apparatus affords a ready means of doing so without pulley and weight.

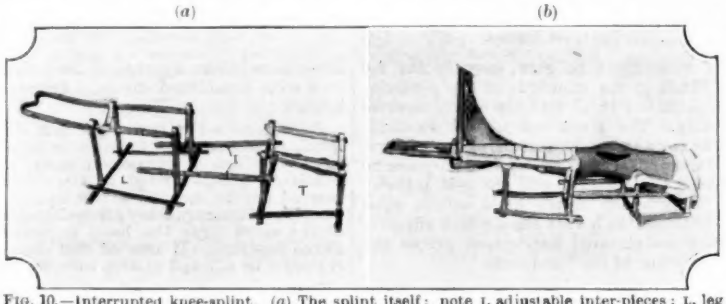

FIG. 10.—Interrupted knee-splint. (*a*) The splint itself; note I, adjustable inter-pieces; L, leg section; T, thigh section. (*b*) The splint applied, with adjustable foot-piece added.

Knee-joint Injuries.

It has been the consensus of opinion of the various surgeons with whom we have come in contact that most of the splints in use at the present time for injuries to the knee-joint prevent easy dressing, owing to the bars of the splint running close along the sides of the knee. In many cases dressings are soiled by coming in contact with the bars just as they are about to be applied to the wounds. In order to overcome this difficulty we have adopted the following splint.

Interrupted Knee-splint.

It consists of two parts—one for the thigh and one for the lower leg. The thigh-piece should extend from the ischial tuberosity to a point one hand's breadth above the patella, so as to leave the upper limits of the knee-joint free.

It is built up from an open base-piece which is broad enough to rest firmly on the bed. The superstructure from this base-piece inclines somewhat to give slight flexion at the knee, this incline being easily secured by making the hoop lying against the tuberosity deeper than that at the lower end of the thigh. The part for the lower leg is built in a similar manner, but without any variation in the depth of the foot. It extends from just below the tubercle of the tibia to a point well beyond the sole of the foot. The two parts are then fixed together by short longitudinal bars on either side, pinned to the upright legs at the knee, the main point being that these short bars are on a much lower level than the knee. In order to give such variation of distance between the two parts as may be required in the individual case, these short bars are adjustable to suit the varying length of the lower extremity. (Fig. 10.)

Application.—Lift the leg up on the splint and support it by flannel bands. Place a sandbag through each sole-piece to give extra stability. Extension is then applied to the leg and the pull taken by the end of the splint. The counter-extension obtained is the pressure against the ischial tuberosity and diffuse pressure against the flexed thigh produced by the supporting bands of the thigh-piece. The extension gained is sufficient to separate the articular surfaces of the knee-joint. The principle is identical with that of the Thomas knee-splint.

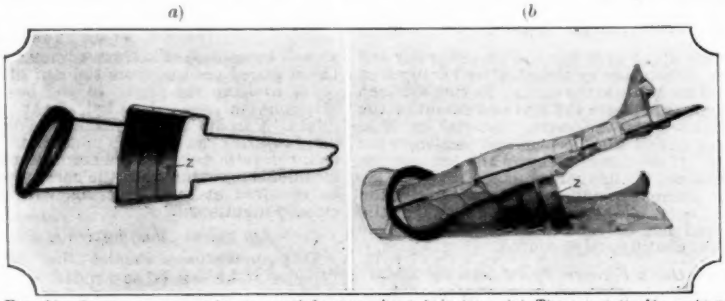

FIG. 11.—Thomas's knee-splint adapted for knee-joint injuries. (*a*) The splint itself; note Z, curved zinc strips with clip hinges, each of which may be separately removed with its superimposed dressing. (*b*) The splint applied, showing the manner in which access is obtained during dressing.

Modified Thomas Knee-splint (for Treatment of the Knee joint).

Another for the same purpose can be made from a Thomas knee-splint by moulding out the bars in the knee area to any required distance. This is done in the manner shown in the accompanying photographs. In order to facilitate access to the joint three zinc bands, each 3 inches wide, support the knee posteriorly. These are so moulded to the side-bars that the fastening on either side may act as a hinge when one of the zinc supports is freed from the bar. During dressings they are unfastened at one side and allowed in turn to fall back out of the way in the manner illustrated. (Fig. 11.) Each zinc strip should have its own superimposed dressing.

Extension Apparatus for Stumps.

Types of such apparatus have been made by cutting short the Thomas splint and fixing on a square of aluminium, to which extension is applied to the stump. In most of these apparatus the square is much too large for the size of the stump, and extension is thus not in line with the axis of the stump. This can be overcome by fixing a ring, the size of the stump, inside this square by means of short legs. At the same time, it is much more convenient if the square can be made moveable up and down the splint by fly-nuts. (Fig. 12)

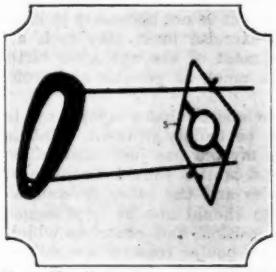

FIG. 12.—Extension apparatus for stumps. Note the adjustable squares which takes the extension.

Application.—Adjust the ring of the apparatus accurately into position on the ischial tuberosity and perineum. Then apply strips of inch adhesive plaster firmly to the skin and the stump over the lower 6 inches of its length. These strips should be placed evenly at regular intervals round the stump. The free ends of the adhesive plaster are now carried and made taut upon the inner ring of the apparatus. The extension pull is now made by moving the outer square away from the stump and fixing it at the required strain. Counter-extension is obtained in the usual way. In the course of time, when the skin has come down to the end of the stump, it can be further moulded round by crossing the extension straps and by reducing the distance between the end of the stump and the squares holding the ring.

THE CAUSE AND PREVENTION OF MYOPIA.

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ALL authorities are agreed that myopia, or short sight, is rarely a congenital defect, but is acquired through elongation of the eyeball. A point which has not been satisfactorily settled is the method by which this elongation is produced. All authorities, however, are agreed that it is the use of the eyes for near work which causes myopia, but are not unanimous as to the method of causation. The majority favour the view that the convergence of the eyes required for near work causes pressure on the eyeball and in some way its elongation. "A tendency to myopia is caused by prolonged reading and near work."[1] "While no one doubts that near work produces near sight, observers have not been able to agree as to how it does it."[2]

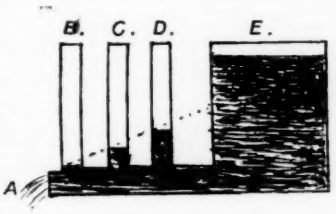
Close Work as Cause of Myopia not Proved.

Now do facts support the hypothesis of myopia being caused by close work? Quite apart from mechanical difficulties which present themselves on the convergence hypothesis, we find that in convergence excess, as in convergent strabismus or internal squint, myopia is *not* produced and convergent strabismus is almost exclusively found in hypermetropic eyes. Again, it is freely stated that as few of the labouring classes are seen to be wearing glasses, their sight must be better than those who do. This argument is a very fallacious one, as it does not follow that because a man does not wear glasses he does not require them. There is a great prejudice against wearing glasses among the labouring classes, and they will not wear them if they can possibly avoid doing so. A barrister will wear glasses for the correction of a trivial defect, as, for instance, 0·25 D. of myopic astigmatism, whereas a dock-labourer with very high myopia of −25 D. will not wear them, and does not even feel the need of them. Again, many children become myopic without having used their eyes particularly for near work. All are educated alike; why should a certain number become myopic, and how is it that a certain number become myopic who have scarcely used their eyes for near work at all. It is very doubtful whether the use of the eyes for near work has anything to do with the production of myopia, and certainly nothing of the sort has been proved. Even when the selected occupations have been given—compositor, lithographer, &c.—it will be found that the myopia was not contracted in their occupations, but the occupation was selected because of the short sight.

The Primary and Essential Cause of Myopia.

The cause of myopia must be looked for in other directions. The outflow of lymph from the eye may be divided into anterior and posterior channels. We are here only concerned with the posterior channels, which empty themselves into the lymph spaces of the optic nerve. The lymph space which is found between the retina and choroid empties into that of the optic nerve. "Up to the present time nothing certain is known in regard to disturbances of the function of the posterior lymph passages."[3] It is the purpose of this paper to show that the primary and essential cause of myopia is an obstruction of the outflow of this fluid, which, increasing the intra-ocular tension, distends the sclerotic and causes myopia by elongation of the eyeball. If anyone tries to lift a very heavy weight which is clearly above his power a feeling of tension may be noticed in the eyes. The posterior portion of the sclerotic is a weak spot just like the inguinal ring, which will give way on undue pressure. This is particularly likely to occur whilst the eye is soft and growing, but under great stress appears to occur at almost any age.

The diagram will make my point clear: *E* is a cistern and water is escaping at the outlet *A*. *B*, *C*, and *D* are tubes open to the air, and the height of the column of water shows the pressure at each point, this diminishing as the outlet is reached. It is obvious that if the outlet *A* be closed, the water will rise in the tubes *B*, *C*, and *D* to the same height as that in *E*. Now suppose all the apertures closed with movable plugs and the whole filled with water which just touches the plugs, a pressure of ½ oz. on one plug 1/10 inch square will cause a pressure of 3 lb. 2 oz. on another plug 100 times its area, a square inch. When a back pressure is exerted at *A* this first acts at that point, and at *B* before *C* Anyone who has witnessed a violent fit of coughing or straining in lifting very heavy weights, must have noticed how the veins of the neck stand out, and the eyes appear to be starting from the head. Not only is the posterior outflow obstructed, but the other outlets as well, including the ophthalmic vein. The effect is increased by the recumbent position. A sclerotic which is not strong enough to resist the pressure gives way. When a weakening of the sclerotic has been effected less pressure is required to increase the dilatation. The space between the retina and choroid forms a closed sac, and the fluid secreted into this space is discharged through the lymphatic spaces of the optic nerve. Any back pressure causes tension in this space and may cause detachment of the retina. If this does not occur the sclerotic may give.



Evidence in Support of Theory.

The examination of a large number of cases of myopia, particularly those of a progressive kind, showed that one of

[1] Jessop: Ophth. Surg. and Med., p. 434.
[2] Duane's translation of Fuchs, p. 765.
[3] Ibid., p. 295.

the factors described above was present in every case. A boy, for instance, will state that he had no trouble with his eyes until after he had left school, but in his employment, where he had continually to lift heavy boxes, began to get more and more short-sighted. Then he will complain of a feeling of great tension in the eyes and headache after much lifting. The ordinarily given causes of myopia cannot apply in a large number of cases, as, for instance, porters, carmen, and those who do not use their eyes for near work. Again, in many of those having a sedentary occupation the form of exercise selected will be found to be one which would act in the way described, as, for instance, boxing, wrestling, cycling, rowing, or digging. Coughing also appears to be a potent cause. A boy will state that there was nothing wrong with his eyes until he had a very bad attack of bronchitis; immediately on returning to school the master noticed that he was short-sighted and sent him to a doctor to be examined, and he was found to be myopic. It is obvious that any cause tending to diminish the resistance of the sclerotic will be an important factor. The pathological anatomy of the eye in a case of high myopia corresponds exactly to the view advanced; the changes at the macula, the atrophy of the choroid between it and the optic nerve, the elongation of the posterior pole, the thinning of the sclerotic, the enlargement of the lymph spaces are exactly what we should expect.

In order to make the point clearer it may be as well to give a few illustrative cases.

A warehouse boy had very good sight until after he had left school and bought a bicycle; riding uphill caused him pain in the eyes, and then ordinary riding; gave up cycling because of it and found he had become short-sighted. Numerous cases could be given in which the myopia was found after an attack of whooping-cough, rheumatic fever, diphtheria, or scarlet fever.

A public-school boy had very good sight until 13. Used to keep wicket at cricket because of his sharp sight; then got a severe attack of measles, with much coughing and pain in the eyes. On returning to school could not see the ball at all and had to give up cricket.

Newsagent, aged 36. Very good sight until he was 26. Very fond of going to the theatre. At 26 he became a warehouse porter and had to lift very heavy boxes. Then noticed that he could not see at a theatre, and that he had to wear glasses of steadily increasing strength. Came to the conclusion that his work was affecting his eyes, and accordingly gave it up after 2½ years. His sight has not got worse since he has adopted a sedentary occupation.

A man had very good sight until after he had left school; then worked in a timber-yard lifting heavy wood. His sight became defective and he had to wear glasses. His sight has not altered since he adopted a sedentary occupation.

Music-hall artist, myopic, and with double detachment of the retina, had very good sight until he took to boxing on the stage, and then became short-sighted. Numerous other cases of boxers, porters, dock-labourers, and carmen could be given. Many of these had a fairly high degree of hypermetropia when young. On the other hand, many cases of hypermetropic persons could be given who have always had a sedentary and studious life and often taken the least possible exercise. For instance: clerk, aged 30, corneal nebulæ both eyes and compound hypermetropic astigmatism, always sedentary, scarcely took exercise, even at school.

A man had very good sight until he was 12 and had measles, and then became slightly short-sighted. Many years afterwards had pneumonia, and found on recovery he had become very short-sighted in the left eye. Low myopia right eye, very high left. Two well-defined and distinct myopic crescents in left eye.

Cases in which the myopia is found in only one eye are still more difficult to explain on the old hypothesis and are usually found after an illness.

Numerous cases could be given of those who have become myopic at an early age, and this myopia has not increased, even with excessive use of the eyes for near work. The most rapid increase of myopia in my experience was the case of a warehouse boy, whom I advised to obtain glasses and to get a lighter occupation. When he obtained his glasses he was informed that he must not use his eyes for near work, and exercise had nothing to do with it. He accordingly, in addition to his heavy work, joined a gymnasium and went in for boxing. After six months he stated that his glasses (which were high) were absolutely useless to him.

Prevention of Myopia.

Any cause which will increase the intra-ocular tension by obstructing the outflow should be avoided in any case of commencing myopia so as to stop increase in the myopia and in advanced cases detachment of the retina. The student who takes his exercise very intermittently should particularly avoid these forms—as, for instance, riding up steep hills and bending forward, if a cyclist. If a rapid increase in the myopia is coincident with his cycling this had better be given up. An occupation which involves heavy lifting is not suitable for a myopic. It is particularly in those who have sedentary occupations and who are not in a fit physical condition, and have a hereditary tendency to myopia, that these forms of exercise should be avoided. Careful regulation of exercise, especially in the debilitated, is necessary. Exercises which, whilst very easy for some, are accomplished by the patient with the greatest difficulty and strain should be forbidden; for instance, if a child can only with the greatest difficulty and pain in the abdomen raise itself on a bar. Exercises which after inquiry are found to cause a feeling of pain and tension in the eyes should be strictly forbidden, but it is not necessary to keep the patient from books. As exercise must play such an important part in the development of the eye after birth hypermetropes should take as much as possible and avoid sedentary occupations.

It should, of course, be remembered that a myopic eye is a damaged eye and should not be unduly strained. This is particularly the case when the myopia has just occurred or is still increasing. The same precaution should be taken in the case of illness, like measles and the other fevers that have been mentioned. Patients should not be kept longer than possible in a recumbent position, and exercises which are likely to increase the intra-ocular tension should be forbidden until they have quite recovered

I must here express my indebtedness to Major J. Drew Moir, R.A.M.C., for furnishing me with numerous examples similar to mine which have occurred in his recruiting experiences.

SOME NOTES ON PORTUGUESE SURGERY

DURING THE FIRST THREE MONTHS ON THE WESTERN FRONT.

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AFTER three years of war and surgical practice, nothing new can be expected from a practice of only three months, during which an endeavour was made to put into execution, without any attempt at innovation, what appeared to be established regarding treatment of wounds. As within this time Portuguese wounded already number some hundreds, it becomes necessary to refer to the methods so far chiefly used in the attempt to treat the various wounds, observing their immediate effects, as the remote ones can only be detected in the course of time.

In the work done so far, not only Portuguese but also British surgeons[1] should be mentioned, as for a short time at the beginning the wounded were almost exclusively looked after by the staff of the Highland No. —— Casualty Clearing Station. Warm tribute should here be paid to the zeal of the British personnel (both doctors and nurses) for the way in which they carried out this sympathetic mission.

Owing to the increasing number of Portuguese contingents at the front a Portuguese section was attached to the Casualty Clearing Station, the doctors of which took over the entire clinical direction with, however, the great help of the British sisters and Portuguese staff.

Finally, a third phase was marked by the opening of our own hospital, and the clinical service of the first line became entirely Portuguese, as it was already from the regiments to the ambulances.

Scheme of Organisation.

I am not now going to describe the organisation of the Portuguese sanitary service from its foundation in connexion with the war of movement in regard to its surgical aspect, which is now chiefly in view; but it is necessary to describe the scheme of organisation so as to appreciate the manner in which endeavours are made to make a service complete as far as possible.

[1] Lieut.-Col. Stirling, Capt. Alderson, Lieut. Leathart, Lieut. Macedo, Lieut. Cardoso, Lieut. Palmeirim.

The first dressings and first-aid are all carried out at the Advanced Aid Posts (*postos de socorros avançados*), and from there the wounded are carried to the Aid Posts (*postos de socorros*), where the conditions for their treatment are much more effective.

Here hæmorrhages are duly treated, fractures are rendered immobile, and in general tetanic antitoxin is administered. These posts are under regimental control. The transport of the wounded is rapidly made therefrom by means of motor-cars to the Ambulances where the dressings are completed, the less important cases remaining some hours or a few days, the more serious ones being evacuated as soon as possible.

It must be pointed out, however, that there are three Ambulances per division; two of them, independently of their general function, have installations with the necessary material for sterilisation and operations of great urgency in the treatment of very severe cases. For this there is no lack of staff of the utmost competence, including well-trained surgeons. The wounded are then kept there for some time comfortably accommodated and are evacuated when the immediate danger is over. These Ambulances, therefore, work as Advanced Surgery Centres, where operations are successfully effected within a few hours of a man having been wounded.

The wounded are transferred from the ambulances to the hospital (Hospital de Sangue), where the conditions are such that they can be very conveniently treated. This is not only a hospital for evacuation, but also for a more careful observation of the wounded, of whatever nature. As we do not possess special hospitals, in this formation there are the necessary observation rooms and a competent staff for ophthalmology or for oto-rhino-laryngology, urology, stomatology, and dental prosthesis. There is attached besides the Bacteriological Laboratory belonging to the Army Corps, and we are thinking of installing as well a radiological section, which becomes absolutely indispensable.

In spite of these means of observation and treatment, the hospital is nevertheless used for evacuation, and the great majority of wounded do not stay there for more than five or six days. Others, in the minority, stay there relatively longer, but all those that require it have—so far as operations are concerned—the advice of a specialist, and this is a great guide in cases requiring urgent treatment. It is not, then, as some people think, unnecessary to have special departments in a front-line hospital, but there are also at the base other specialists to continue the treatment started at the front with good success.

Nature of Cases: Shock and Gas Gangrene.

In these notes, as already pointed out, I only refer to those cases which have passed through the hospital or through the No. —— Casualty Clearing Station; and chiefly through the latter, where I have worked for some time, I have had an opportunity of collecting valuable information concerning work which other colleagues—both English and Portuguese—have carried out before me.

It is not necessary in order to give an idea of the work accomplished so far to describe each case separately, because if some deserve special attention, there are others, much more frequent, which must be considered in a general way.

Of all the wounded that come into the casualty clearing station some require a greater amount of attention from the beginning; others, although not of so grave a nature, must not be forgotten, because from insignificant wounds terrible complications may arise. There are two questions, however, which must be considered in such cases, which sometimes work against each other, leaving the surgeon in a very difficult situation. These questions must, moreover, be considered with care, the welfare of the wounded being the only important matter. These questions are—first, shock, and secondly, gas gangrene.

Patients suffering from shock must not be operated upon unless their power of resistance guarantees the result, but in order to decrease the shock it is necessary to wait for the results of energetic medical treatment to which the patient is submitted. It may, however, happen that by the mere fact of waiting another illness may result, at least as bad as the other, if not worse, derived from the intense development of the *Bacillus perfringens*, which naturally finds in the lacerated and dirty tissues exceptional conditions for cultivation and production of its fatal toxins.

In these difficult cases the best thing to do is to wait, trying to relieve the state of shock and only intervening when through hæmorrhage the wound itself causes the exhaustion of the patient. One seeks in such cases only to obviate this evil, leaving the wounds entirely open and not worrying about what further shall be done, until later, when the conditions of resistance are better. But when so operated on, these wounded must be treated under conditions of comfort, the surgeon using every means at his disposal both before, during, and after the surgical operation, to raise the patient's strength. And when this result is attained, when the pulse indicates it—or even better, when the degree of arterial pressure indicates it—the operation must be carried out, which may even be excision or amputation in extreme cases. However, in more severe cases where to wait would mean the certain death of the patient, premature intervention becomes allowable, but this, it is needless to say, is rarely crowned by success. Gas-gangrene and later on anaerobic septicæmia develop in many cases, either with severe wounds where the circulation by gangrene of the vessels becomes greatly compromised, or in small wounds chiefly when the foreign body carries pieces of clothing with it which go mainly into the muscular masses.

Two cases will give a clear idea of the facts pointed out, and they refer to infections of this nature, one in an extensive wound, the other in a wound of minimum size.

CASE 1.—Wound caused by trench mortar; operation four hours later. Entry wound in antero-external part of left thigh in lower third. Exit wound very large, in postero-external portion. Compound fracture of femur. In the path of the splinter I found the metallic point of the sheath of the bayonet drawn in by it. Extraction of foreign body; cleaning of wound; large resection of muscular parts, aponeurosis; no great hæmorrhage and the great sciatic nerve stretched intact across the wound. Wound cleansed with alcohol, "B.I.P.P.," application of 5 Carrel tubes. Immobilisation in Thomas's splint.

The patient was recovered from the state of shock by heat, saline infusion, pituitary, the general condition being much better 12 hours later, when the dressing was taken off. The wounds had a good aspect without any signs of gangrene, no smell, the muscles keeping their susceptibility to contact. At this moment the patient complained of pain in the thigh. Six hours later the dressing was again removed, gas coming out from anterior wound, with bad smell both in this and posterior one. Tumefaction of thigh up to the groin, tympanic sound to percussion, greenish and bronze tinge of skin, cold extremities, rapid fall of temperature—rapid, and low-tension pulse, continuous agitation. The patient complained of pains in the corresponding iliac fossa. The gaseous infiltration now began to manifest itself a little in the abdominal wall. Death occurred two hours later, 30 hours after wound; 26 after operation, toxæmia having developed evidently in less than four hours (Obs. No. 39).

CASE 2.—Wounded in right thigh by piece of shell—insignificant wound in middle third and external, caused the day before. Patient complained of local pain, where there was evident tumefaction; very frequent pulse, temperature reaching 103° F. before intervention. Operated on 30 hours after being wounded. Excision of entry wound, the tumefaction, which seemed subcutaneous, was found to extend to the aponeurosis. Excision of the aponeurotic wound; tumefaction of the muscle, the fibres of which were separated, a piece of metal with cloth round it being found in them, which was extracted. The muscular fibres had a violet tinge—a bad smell, with development of gas. Large excision of muscle, cutting into healthy tissue, cleaning of wound, scraping, washing with alcohol, "B.I.P.P."; silkworm-gut sutures passed over to be tied later, making secondary suture.

Patient considerably better 24 hours later, without pain, regular pulse, and temperature falling to normal. Was evacuated, the wound looking wonderfully well. (Obs. No. 73.)

The Question of Amputation.

Whenever possible an attempt must be made to save the wounded limb, and in so doing the experience of the surgeon is important, who is sometimes to be blamed for excess of care in this respect, and this was so in Case 1. However, even in the case of compound fracture of the femur—even a very severe one, without either nervous or vascular lesion accompanying it—it is not good practice to amputate at once through the thigh, because, as Professor Tuffier truly points out: "Quand on songe à ce qu'est un amputé de cuisse, il faut être parcimonieux du sacrifice du membre." There are, however, extreme cases of high amputations which, in most instances, are the most unpleasant operations a surgeon is called upon to perform.

But what else can be done with cases in which the gas infiltration spreads rapidly, rising to the thigh without precise limitation? The answer is, amputate.

What is to be done in the case of large exposed fractures in which the bone ends make a salient in the skin, in which there is hæmorrhage through lesion of the principal vessels, in which the corresponding extremities are cold, and in which a part of the limb is, it may be said, lost? The answer again is, amputate.

In all other cases an endeavour must be made to conserve, and it is better to run the risk of causing later a grave infection by not amputating than to amputate at first, thus destroying a limb which sometimes cannot be advantageously replaced by artificial means. But even then he who works in a front-line hospital must necessarily amputate, and must often take the blame of making excessive amputations, not mentioning small ones of the phalanges, which regulate the state of the wounds of the fingers. The number of large amputations effected in the period to which I am referring is about 4 per cent., to which must be added two large disarticulations, one of the arm, the other intertarsal, by Chopart's method, but keeping the scaphoid.

As a rule the amputations on account of gas gangrene, carried out with the view of rapid elimination of a large infective focus, were flapless, and the stump was always left completely open. Conical stumps therefore resulted—non-classical—which later on required secondary operations. After this the patients generally had a good aspect on the following day. The pulse improved and the temperature fell to normal. So far, in all of those cases operated on on account of gas gangrene no one died after the operation.

In the case of the other operations for very bad compound fractures the mortality was greater owing to the state of shock and very often to the hæmorrhage which occurred before the patient reached the hospital. In consequence of this two cases of thigh amputations died, and also one case of leg amputation, in whom at the same time the femoral artery of the opposite side was ligated in Hunter's canal. In these cases the amputations were made according to classical methods and the stump was completely sutured with advantage. Needless to say, these amputations must be made as low as possible, as in the following case:—

CASE 3.—Wound caused by grenade splinter in right leg, almost complete destruction in middle third, with compound fracture of both bones and ends drawn apart, the communication of superior with inferior third being made by devitalised muscles. Lacerated vessels. Hæmorrhage stopped by forcipressure and minimised by application of tourniquet in Advanced Station. Patient without pulse; great anæmia. Separation of the affected portion, the muscles only being cut. Ligature of important vessels, the stump remaining open, the bones not even being trimmed. During the operation intravenous injection of saline.

The pulse rose after the operation and the general state was satisfactory. Dressing when taken off six hours later showed good condition of wound. Tae general condition remained good 24 hours afterwards and locally there were no signs of anaerobic infection, although there was a very fœtid smell in the posterior muscles.

On this occasion a second operation was done: a Gritti's amputation; suture of periosteum, tendons and aponeurosis with catgut; complete suture of skin leaving only two small tubes which were taken out 48 hours later. The patient was evacuated 10 days afterwards, the stump having a good appearance, there being proof of good position of the patella.

At the Base this case was admitted to No. —— General Hospital, where the stitches were taken out and which he left 20 days' later, going to the convalescent depôt with the wound quite cicatrised by first intention and with painless stump.

The forearm amputations were made with flaps which were also sutured, and that of the arm was made with external flap which was left open, having been sutured with good result three days afterwards when the bones were sawn, which was not done during the first intervention owing to the patient's state of shock.

It is clear that in speaking of amputations in consequence of gas gangrene, one must never put aside the idea of large incisions, of large muscular excisions not damaging important vessels, which contribute to the cure of infections of this order, localised in more than one region, sometimes, and which are also very grave. As to anaerobic infection, one must not ignore tetanus, of which, indeed, I have not yet observed a single case during the period referred to. This shows the efficacy of preventive injections of antitoxin, which are always repeated, when the wounded remain for more than a week in the Hospital.

Frequency of Different Classes of Wounds.

It is a well-known fact that limb wounds are the most frequent in this war, as is proved in hospital work, where the percentage of thorax, abdominal, and head wounds is relatively small. I came to the same conclusion, as I have myself established a percentage among the few hundred cases I had under observation, and among others of which I had knowledge. The following are the percentages of the different classes of wounds: Head, 8·8; thorax, 18·8; abdomen, 3·0; upper limb, 28 6; lower limb, 40·8.

Aerobic Infections.

Besides the anaerobic infections and shock, which are the first dangers to be considered, the aerobic infections remain to be fought. It cannot be discussed here—as I have not the necessary facilities—as to whether these infections are dependent on the number of bacteria or on their activity. But to avoid the danger of an increased bacterial virulence, the local treatment of the wound is of the greatest importance, and the individual resistance must also be maintained in a good condition to overcome the attack of the toxins.

The treatment of septic wounds has evolved to such an extent with every day's practice that one has almost passed from the old incision and drainage in the different *étapes* of the use of antiseptic agents, to excision of the wound, and primary suture, which in many cases gives excellent results. In other cases it may not do so, because there are wounds little susceptible to excision and perfect cleanliness, and in these cases the use of antiseptics is, as is proved by A. Carrel better than anyone, of paramount importance.

One must not put aside the excellence of Carrel's method, and in order to believe in this doctrine it is enough to relate my interesting visit to Compiègne, where everything, from the bacteriology to the cicatrisation studies of the wounds, is proved with evidence. But I am sure if the results are not always brilliant it is because the application is not rigorously carried out, and from what I have seen the solution which is employed in many cases—eusol—has nothing in common with the technical delicacy of the true Dakin solution.

In following the Carrel indications, I shall never forget the opinion of one of the staff of the Neuilly American Hospital, who, referring to this method, told me:—

"It is a method in which a rigorous vigilance is required, and if the wound is well bathed by the hypochlorite regularly it is a most splendid method."

I think, however, that the results of this and other processes by the use of alcohol, ether, hypertonic solutions, B.I.P.P., &c., are not successful unless excision of the wound is complete.

In the case of a few wounded I had the opportunity to get a clear notion of the facts just expounded, and the treatments carried out are clearly shown in the following percentages:—

Excised wounds not closed	22·5	per cent.
,, ,, ,, ,, "bipped"	27 4	,,
,, ,, primary suture	10·6	,,
,, ,, ,, ,, "bipped"	24·7	,,
,, ,, partial suture (Carrel)	14·8	,,

Without practising the methods of phagocytal antisepsis I think that the ideal therapeutics of infected wounds is the mechanical antisepsis through complete excision of the wound followed by suture, but in some cases one must have recourse to chemical antisepsis with the aim of secondary suture, and it is at this moment that Carrel's method has first place.

There is much to be considered with regard to *foreign bodies* which, if not extracted, give rise to all kinds of aerobic or anaerobic infections, which are always to be feared. A correct localisation of the foreign body, followed by its extraction, is not a solution of the problem under the aspect of infection of the wound. It is also necessary to consider the infected path of the projectile, and to know it. For this purpose radiography would give us the maximum of advantage if, besides the localisation of the metal, it could indicate in any way its trajectory through the soft parts.

Compound Fractures.

The treatment of compound fractures has been improved by the experiences of the present war, and from this point of view excellent results ensue from utilisation of the Robert Jones's and Thomas's splints, which are very useful and comfortable. Sometimes, however, there is an opportunity to do something more with these fractures than cleaning and drainage of the wound and subsequent immobilisation. I myself saw a compound fracture of the humerus caused two days before by a trench mortar, and having the bone ends displaced, with overlapping, and I attempted plating, using a Lambotte's plate. The results were good, the bone continuity being almost normal on the X ray examination, as well as the adaptation of the plate. The wound healed by first intention, the condition of the patient being excellent.

Regarding the treatment of the soft parts in a compound fracture, it seems to me, and to-day it has become a fact, that nothing is lost in the transformation, when possible, of an open fracture into a closed one after complete excision of the lacerated tissues.

Knee-joint.

The knee is the type of joint for the study of articular lesions, either infective or traumatic. However, if I saw sometimes in civilian practice suppuration of this joint, I have never observed such cases in war surgery, having opened the joint, extracted foreign bodies from it, but closing it completely afterwards, suturing the synovial membrane, the aponeurosis, and the skin. In this consists the improvement in the treatment of joint wounds, following the methods described in 1915 by Delorme and Kocher.

Up to now I have only operated on four cases by this method, but with success, washing or not the articular surfaces either with salt solution or with ether. Of these cases, in two I extracted the shell fragment which was intra-articular; this I did not succeed in doing in the third case; the fourth was a penetrating wound by a bayonet point.

When the wound is an anterior one the exploration of the knee is easily done, either by the Kocher method or by the incision in U, but everything is more difficult if the wound is posterior. Regarding this matter the following case is interesting:—

CASE 4.—Wound made the day before by fragment of trench mortar on external part of popliteal region; there were slight synovial effusion and articular pains; high temperature; X rays showed a foreign body fixed in the "plateau tibial" on the internal and posterior part. The splinters were removed, not without difficulty, after ligature of important branches of the popliteal vein severed by the projectile in its path, which spread itself deeply forward, passing outside the artery, which was intact.

The wound was cleaned and sutured after washing with alcohol and the application of "B.I.P.P." Immobilisation in Thomas's splint. Twenty-four hours later temperature was lower, patient comfortable and without pain; and the same conditions were manifested the following days. The stitches were taken out after 12 days, there being cicatrisation by first intention and the angle of flexion of the leg on the thigh being 45°. After 14 days the patient was evacuated. (Obs. 57.)

From the other cases (Obs. 40, 74, 118) satisfactory news was received from the Base Hospitals. It is to be noted that in all these cases we started with passive and active movements within eight to ten days of the surgical operation.

Elbow-joint.

It seems to me that the elbow-joint is not so easily explored by arthrotomy as the knee. However, in these cases X ray observation is very helpful, and when comminuted articular fractures are observed, when the joint itself is exposed, I think that primary total excision is indicated as a drainage operation. Proceeding so, inconveniences do not result, but it is necessary to start from the principle that even in the best technical conditions the success of the periosteal excisions depends always upon the post-operative treatment.

After these excisions, for the first 24 hours I keep the limb in extension, using the Thomas's splint, afterwards the forearm is fixed in an acute angle with the arm. The wound, which has been partially closed, is dressed with gauze, which keeps the bone ends apart; this gauze is taken off later, and at the end of the first week is no longer necessary. At this period passive movements are started gradually, avoiding great pain to the patient.

The immediate results of the three operations already done were satisfactory, and in two of them I know that, a month later, the function of the limb was improving.

Wounds of Head and Abdomen.

In our case it is not worth while to make reference to the number of head and abdominal wounds. Beyond the exploration, which is a rule in our service with scalp wounds, only two trephinings, so far as I know, were done in this first period, one in the occipital region in a case of depressed fracture and compression of the visual centre (M. Almeida), the other one in the temporal region in a case of depressed fracture of the "gutter" type with hæmorrhage from the lateral sinus. The results of both operations were successful.

The number of abdominal wounded that reached the hospital were three, not including the cases operated on before at the Casualty Clearing Station and later at the Advanced Surgical Centres, both British and Portuguese, about which I have not detailed notes.

The lapse of time in these three cases between the wound and the operation was very long, and in two—which were fatal—15 hours. One of these died with peritonitis 48 hours after operation, having a penetrating wound, but no perforation of intestine; the other case died four hours after I had performed laparotomy, excision of portions of intestinal coils, and end-to-end entero-anastomosis in three points; the third case was operated upon with success, the missile being extracted and the perforation of the intestinal coil sutured.

Wounds of the Chest.

Non-penetrating chest wounds show themselves in many different ways, the path followed by the projectile being always very interesting, as well as their localisation, owing to the resistance offered to them by the ribs. The paths along the ribs, with lateral or anterior entrance and localisation of the projectile in the back; the fractures of the bones (scapula, spinous process of vertebræ) which are met in the path of the splinter, which does not penetrate the thorax on account of its direction or on account of the resistance met with; the bloody expectoration, with external minimum lesion; the generalised emphysema, even without external lesion, caused by violent explosions; all these are examples of the variety which these wounds show.

It is perhaps necessary to consider the extreme gravity when dealing with large dorsal wounds, with fractures of the scapula, which are under such an aspect similar to external wounds of the buttocks, so often fatal. But the interest of the penetrating wounds is much greater, as the following cases will show better than any comment:—

CASE 5.—Wounded by shell splinter at 3 A.M. on patrol duty. First dressing half an hour later. Owing to the conditions under which the man was wounded, he was transferred from the Advanced Post to the Advanced Dressing Station and from there to the Casualty Clearing Station, where he arrived six hours after receipt of wound. Since being wounded he had felt quite well the passage of air through the wound, but there was no faintness or pain, exaggerated dyspnœa, or hæmoptoic expectoration; even when moved he did not feel especially ill except when carried in the motor-ambulance.

Once at the Casualty Clearing Station he was not operated on immediately owing to the state of shock; pulse could not be felt, face cyanosed. Two hours later the bad state continued, and intervention was decided upon, the man having an arterial pressure of 8-5 (Vaquez).

Operated on with local anæsthesia (novocaine). The wound in the left hemithorax below the scapula was very irregular, the air continually coming and going through it with enormous violence, and at the bottom could be seen, through the torn pleura, the lung overlapping the thorax at each inspiration. No appreciable pneumothorax. However, the wound in the pleura was actually the size of a penny, there being as well a fracture of the seventh rib. The wound was cleaned, incompletely, the irregular extremities of the fractured rib were resected, and the opening closed in three musculo-aponeurotic planes, the suture of the pleura not being achieved.

The patient, soon after the closing of the wound, declared that he felt much better, and a quarter of an hour after the intervention the arterial pressure was 9-5·5. A few hours later the pulse became perceptible and there was no exaggerated dyspnœa. The first night was passed relatively calmly, and the next day the general condition was much better, with slight cough and slight temperature, arterial pressure being 10·5-8. Forty-eight hours later the general condition remained good and on taking off the dressing the aspect of the wound was good.

On the third day examination of the thorax revealed, about the fifth rib, dullness and loss of vocal fremitus, the same condition behind, and there seemed to be abundant hæmothorax. Pulse good, arterial pressure 11-6·5.

On the fourth day the general condition was fair, but not so good as before. For the first time there was hæmoptoic expectoration and auscultation showed symptoms of slight broncho-pneumonia at the base; at the same time the external wound had around it an inflamed zone and the patient complained of local pains. Arterial pressure 12-7·5.

During the next days the pneumonic focus became localised and the pleural effusion increased slightly, there being a slight displacement of the heart towards the middle line. A puncture was made on the ninth day after the intervention and the report of the analysis was as follows: "Hæmothorax fluid for organisms, nothing in films, cultures, both aerobic and anaerobic, were sterile.—J. W. McNee."

In the meantime, however, the external wound was only subcutaneously infected, the Carrel treatment being applied with good results. The general state of the patient was, however, always improving, the absorption of the effusion having been delayed, the elevation of temperature showing itself now and again. A second analysis of the liquid did not reveal anything abnormal, either from the cytological or bacteriological point.

More than two weeks later the patient was evacuated to the Base, having then a very good aspect, the wound showing a tendency to cicatrise.

From No. —— General Hospital, besides the satisfactory news from the patient himself, I received the following note a month later: "Wound granulating, general condition of patient improved."

The temperature, 100·2° F. on day of operation (P. 112, R. 26), rose to 102·8° (P. 106, R. 41) by the fifth day; falling to 99·4° (P. 100, R. 30) on the eighth day, and rising again to 103·2° (P. 117, R. 34) by the tenth day. Temperature range was then lower and did not rise above 100° (P. 102, R. 30) after the sixteenth day.

It must be noted that at No. —— Casualty Clearing Station radiography was resorted to in this case, but did not reveal very clearly the existence of any foreign body.

CASE 6.—Wounded by splinter of trench mortar at 2.30 P.M., the first dressing having been applied at once. Soon after patient had pains in the back and great difficulty in breathing, feeling very bad during transport, chiefly in motor ambulance. Was taken into the Casualty Clearing Station, where he remained under observation, and at first it seemed there was no communication of the pleural cavity with the exterior. During the night dyspnœa continued very intense with slight hæmoptoic expectoration; the general condition, however, remained good.

Operated on next day. Small wound in chest about third right rib and not far from sternum. Pulling apart the fibres of the large pectoral muscle the characteristic whistle of perforation of the pleura was heard, coming from behind the third costal cartilage. The wound was cleaned and sutured with overlapping of the pectoral, afterwards aponeurosis and skin.

The general condition of the patient after the operation was good, but he kept complaining of great thoracic oppression. Twenty-four hours later dyspnœa kept on; dullness at base of right hemithorax, and sensation of continuous oppression which decreased with injections of morphia and atropine.

The following days there were symptoms of pulmonary collapse, and small foci of broncho-pneumonia. The hæmothorax became more abundant, but even here puncture on the fifth day gave a liquid the analysis of which did not reveal bacteria, no organisms in films, culture negative), there being, however, large elevations of temperature followed sometimes by violent rigor. It must be noted that this patient came from a malarial zone of Portugal.

Two weeks later the patient was evacuated to the Base with a cicatrised wound. I learned from him a month later that the wound has healed, no signs of hemopneumothorax, a remittent temperature in morning.

The temperature, 101·2° on second day (P. 130, R. 28), reached 102° (P. 110, R. 30) on fourth day. Temperature then rose to 104·6° (P. 120, R. 44) by sixth day, fell to 99·8° (P. 90, R. 30) by eighth (105·2° in the afternoon). Between ninth and eleventh days T. ranged from 98·6° (P. 80, R. 24) to 105·4° (P. 115, R. 40). After this T. was not above 99°.

Also in this case radiography of the thorax did not give much information.

CASE 7.—Wounded by grenade splinter in left hemithorax, anteriorly. Patient was carried a little later to the Ambulance, where cutaneous suture of wound was done. He was sent to the Front Hospital with foreign body in posterior and lateral portion of same side of thorax, being fixed in upper layers of the skin. When he breathed the anterior suture appeared very superficial and further intervention was undertaken. The wound was cleaned, the ends of the second fractured rib resected, and musculo-aponeurotic, and afterwards cutaneous, suture carried out. The foreign body, which had traversed the lung, was then extracted by means of a vertical incision, bringing with it pieces of the fifth rib and cloth. The posterior wound was cleaned deep and superficial sutures were inserted. Arterial pressure before second intervention 14–7 (Vaquez), afterwards 13·5–6.

In this case the improvement after intervention was not so evident. However, the patient passed the first days fairly well with no great increase of temperature; the pulse kept fairly good, but the respirations increased. From the very beginning a small hæmothorax formed, which increased gradually but not extremely, not hiding Traube's area, nor displacing the heart, which in a few days returned to its normal position. Later on, however, the symptoms of hæmothorax were clear, but there were never signs of broncho-pulmonary lesions.

During the course of his illness the patient was always remarkably restless, and he was only quieted under the action of injections of morphine and atropine. At the end of eight days, coinciding clinically with re-absorption of the hæmothorax, a subicteric colouration appeared in the conjunctiva, which next day became very pronounced. Then symptoms of violent toxæmia manifested themselves, which in 48 hours caused death.

Post-mortem.—Left pleura normal; inferior lobe normal. Superior lobe: On superior and anterior surface a hole with irregular edges of the size of a shilling with small bony splinter, but with no blood clot. Anterior surface of the lung free; on the side along the anterior axillary line, fresh pleural adhesions. Posteriorly there was hæmothorax relatively abundant, there being between the pleura and lung large strata of fibrin which almost completely covered the posterior surface of the lung, above and below the interlobar incisure. These formations were such that only after the lung was taken out and the path of the projectile followed was it possible to find the posterior orifice, which was completely blocked.

The path followed by the projectile ended posteriorly above the interlobar incisure. Macroscopically one could see in it the bronchia of medium calibre open and no very recent clots. From the direction of this path and its posterior obliteration or the absence of anterior hæmothorax it seems that the effusion must have decreased when the posterior obliteration was completed, but it must be noted that in spite of the bronchial lesions there were no hæmoptoic expectorations.

An examination of the other organs did not reveal anything abnormal besides an intense lateric colouration, the bile ducts, however, being free and the gall bladder having a good aspect. The liver, however, was of excessive size, soft, and extremely fatty, and the pancreas was very hard. The microscopic examination of these organs is not yet complete.

These are not notes written with any idea of teaching, but for the purpose of registering facts, which, it is clear, relate to but a short phase of work.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce the forthcoming appearance of a new and revised (eleventh) edition of "The Practice of Medicine," by Sir Frederick Taylor. Articles have been introduced on such subjects as trench fever, progressive lenticular degeneration, soldier's heart, poisoning by trinitrotoluene, and infantilism, while substantial additions have been made to the sections on endocrine glands, dysentery, paratyphoid, poliomyelitis, tetanus, hysteria, and others.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF INTERSTITIAL NEPHRITIS WITH INFANTILISM.

BY HUGH BARBER, M.D. LOND.,
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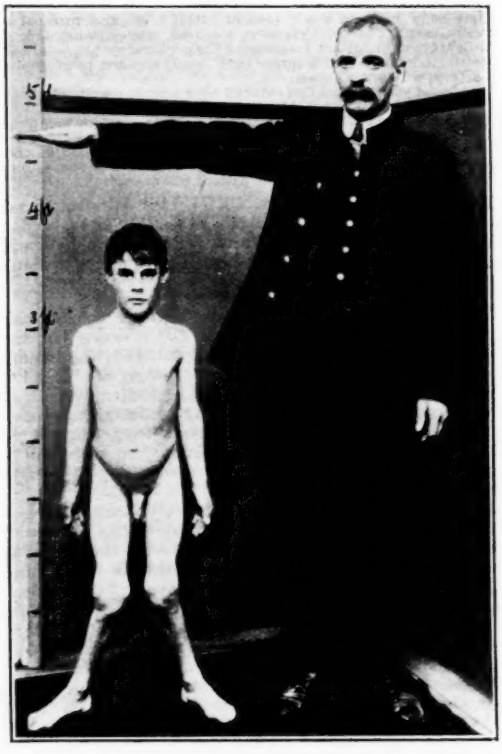
IN the last few years the association of stunted growth, and in some cases of true infantilism, with chronic interstitial nephritis has become fairly generally recognised. This case is, I think, worth recording, because among five cases I have seen (some of which were published[1]) it illustrates the conditions of deformity most completely.

J. J., male, aged 16 years, came to hospital on account of genu valgum and stunted growth. History: Father and mother both healthy and well developed. The patient is one of seven children, all living, and there have been no miscarriages. His three brothers and three sisters are all well developed. He is the sixth child, and his youngest brother, aged 13½ years, can look over his head. His mother thinks he was a seven months' child. He was very small at birth and



remained so; too weak to take the breast and brought up on the bottle. He was seen once by a medical man because the midwife thought he would not live. He never had scarlet fever or any infectious disease or illness. He was always small but active, played football at school, was quick mentally, and in every way except size well up to the average. He left school aged 14 years and began work as an errand boy, when he developed knock-knee and began to walk badly; this seemed to come on comparatively quickly in the latter part of his fifteenth year. His schoolmaster confirms these statements in every detail.

On examination: Height 47 in., weight 46 lb. (average for artisan class 63 in. and 97 lb.[2]). Face not specially pale but

[1] Brit. Med. Jour., November, 1913.
[2] Allbutt and Rolleston's System of Medicine.

rather pinched, voice childish, no hair anywhere on the body, testicles small but slight development. The genu valgum is very pronounced, so that he walks with difficulty; the wrists are affected, as also the joints between the ribs and costal cartilages. Skiagrams show irregular ossification, similar to that of rickets, at the epiphyseal lines around the knee and the wrist; the bones in the hand are normal. The heart is normal; the brachial arteries can be felt, but the radials scarcely; the hæmomanometer records maximum systolic reading 100 mm., diastolic 70 mm. The fundus of the eye is normal. Urine acid, very pale, specific gravity 1010 to 1004 (for one week in hospital, average sp. g. 1005, and average quantity 51 oz. per diem), albumin is present constantly, about one part per 1000. The thyroid appears to be normal. The patient suffers from thirst, but not at all extreme, and his mother had noticed the polyuria. There are no signs of congenital syphilis.

Remarks.—Without discussing the whole subject, this case may be taken to illustrate the typical deformities very completely, although the other symptoms and signs are not very striking and are only elicited on inquiry. It was the genu valgum which led the mother to seek advice, and there is no doubt at all about the late onset of this; there was no sign of it when the patient left school, aged 14. Although infantilism due to interstitial nephritis may occur without bone deformities, if deformities are present they are of this type, with this history; and the condition is of surgical, as well as medical, interest, because the other symptoms may be of such an insidious nature that the kidney disease might be overlooked and operative procedure adopted—an event which took place in one case to my knowledge, in which the urine examined once was found free from albumin, although the kidneys post mortem weighed only 300 grains each in a boy aged 16.

NOTE ON THE PROLONGED USE OF CAMPHOR IN CHRONIC HEART DISEASE.

BY THEODORE ZANGGER, M.D.

I HAVE read with great pleasure Sir James Mackenzie's concise and practical book on the principles of diagnosis and treatment in heart affections, and I would wish it in the hands of all young practitioners. The first chapter on Medical Research re-echoes my own experience of a quarter of a century in Switzerland. However, there is one sentence on the last page I do not agree with, and I hope these lines will induce men more experienced than myself to investigate the matter further. The sentence runs: "Other drugs, such as....camphor, are without any perceptible effect on the heart."

The good practical results I have had for over ten years in giving camphor daily for many months and even years in small doses to patients suffering from chronic myocarditis are corroborated by Professor Marfori's (Naples) investigation.[1] My first experience of camphor treatment some 10 years ago was most satisfactory.

The patient, aged 76, was suffering from weak action of her heart (fatty degeneration), with œdema of legs, chronic dyspepsia (venous congestion of stomach and liver), and apparently slight cerebral œdema, being often drowsy and taking very little interest in her surroundings. I had been looking out for some effective heart stimulant I could give for a long time as I only order digitalis and strophanthine for days or weeks, and when properly indicated. I chose camphor because it acts well as immediate stimulant in acute failure of the heart.

After four or five months of camphor treatment (10 to 15 drops of tincture of camphor given on sugar two or three times a day) the œdema had vanished, the gastric congestion subsided, and the patient began to take interest again in her surroundings, could take short walks—even to early Mass—pay visits, in short, was better than for years for a period of three years. She then left my charge to enter a clinic, where she died from senile decay in six months. She had continued the camphor for several years.

Since then I have given camphor to all my *old* patients with heart trouble, such as chronic weakness of the heart's action, slight insufficiency of the heart, dyspnœa on slight exertion, irregularity of pulse. They have all showed decided improvement, such as I previously had not experienced in similar cases treated without camphor. As regards blood pressure, I find camphor increases low blood pressure (70 to 80 mm.) up to 90 or 100 mm. and more. On the other hand, high blood pressure (over 100) is often decreased; this sounds unreasonable, and can only be explained by regulative action on the nerve centre of the heart.

A clergyman, aged 67, June 20th, 1916. Had an apoplectic attack one year ago, with slight paralysis and aphasia, which had disappeared; had to give up preaching. Heart weak, the patient could only walk very slowly 5 to 10 minutes on a level, else he suffered from breathlessness and heart discomfort. Diagnosis: Arteriosclerosis etiam cordis. Blood pressure 70 mm. After three weeks' use of camphor, 10 drops three times a day, the blood pressure had risen to 100 mm. He took camphor for two months, and then discontinued, as he felt much better. I did not see him again until March, 1917, when the heart was weak again, blood pressure 85 mm. Great improvement after three months, which has continued. He takes walks of ¼ to ½ hour several times a day. On Oct. 5th, 1917, the blood pressure was 95.

I could give records of patients of ages varying from 65 to 89. The old adage of wine being the milk of old age might be modified into camphor: *lac senectutis!* Certainly it should take the place of alcoholic stimulants, the so-called "helpful" glass of wine, the "useful" soda-and-cognac, and the whisky-and-water which certain physicians continue to recommend as heart stimulants.

Zürich.

[1] THE LANCET, Sept. 22nd, 1917.

A CASE OF STAPHYLOCOCCAL INFECTION SUCCESSFULLY TREATED WITH STANNOXYL.

BY ANDREW JOHN MORLAND.

THE following case, in which the administration of stannoxyl was apparently the turning-point in a severe local staphylococcal infection, may be of interest. As a student of medicine, who am also the patient, I contribute the note at the desire of the medical man by whom I was treated.

A. J. M., aged 21. History of a boil in childhood. No further staphylococcus infection until March, 1917—large boil on back of neck. Again in August—abscess on buttock; one dose of mixed staphylococcus vaccine was given. On both of these occasions the boil increased for 10 to 14 days, and was then incised and some drachms of pus let out. In December a third carbuncle appeared on the neck and ran its usual course for a week, when there were redness, swelling, and stiffness of neck. Stannoxyl was then taken, 6 tablets a day. The carbuncle began to diminish on the day following and disappeared during the next 10 days without being opened.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

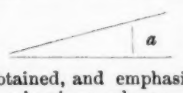
SECTION OF ELECTRO-THERAPEUTICS.

Exhibition of Skiagrams, Slides, &c.

AN ordinary meeting of this section was held on Jan. 18th, Dr. G. HARRISON ORTON, the President, being in the chair. The evening was chiefly devoted to demonstrations of the Technique of Radiography as Applied to the Diagnosis of Jaw Injuries.

Lieutenant H. M. JOHNSTON, R.A.M.C., in association with Captain W. KELSEY FRY, showed, by means of the epidiascope, a series of interesting slides to illustrate the particular technique they employed to secure radiograms of the face and jaw, particularly of the mandible. It consists of a standardised practice at fixed angles, according to the aspect of the part to be brought into prominence.—The PRESIDENT said that for ensuring radiograms being taken and repeated precisely in any desired plane the procedure represented a definite advance.

Lieutenant H. MARTIN BERRY described his own attempts to standardise positions from which skiagrams were taken. The only accessory apparatus he had used was one consisting of two pieces of wood, fastened together at an angle of 30°, supported by an upright. The patient lay with one ear on the plate (at *a*), and his shoulder was pressed close into the recess. Lieutenant Berry exhibited a number of diagrams showing the results obtained, and emphasised the importance of taking stereoscopic views wherever possible, especially in the case of the jaw.



Dr. C. W. S SABERTON showed slides of unusual conditions in the alimentary tract which were recognised by the skiagrams.

Mr. E. E. BURNSIDE demonstrated, by means of diagrams, a new portable Snook apparatus. This form of apparatus had been found to be so useful for military requirements that he hoped it would be more extensively employed in the future. He described in detail its three component parts: (1) a rotary converter, (2) a transformer, (3) a high-tension rectifier.

Skiagrams were also exhibited by various members to illustrate the anatomy of the Fallopian canal.

Reviews and Notices of Books.

Studies in the History and Method of Science. Edited by CHARLES SINGER. Oxford: At the Clarendon Press. 1917. Introduction, Contents, and List of Plates, v. to xiv.; Text and Index, 304. Price 21*s.* net.

THIS magnificent volume is the outcome, says Professor Osler in his introduction, "of a quiet movement on the part of a few Oxford students to stimulate a study of the history of science. Dr. Charles Singer, of Magdalen College, obtained leave from Bodley's Librarian and the Curators to have a bay in the Radcliffe Camera set apart for research work in the history of science, and a safe installed to hold manuscripts; and, with Mrs. Singer, offered £100 a year to provide the necessary fittings, and special books not already in the Library. The work has been carried on with conspicuous success in spite of the absence on military duty of Dr. Singer for the greater part of the time. Had the war not interfered the promoters hoped to have established a *Journal of the History and Method of Science*, and to organise a special school for summer students, "hopes," they add, "we may perhaps see realised in happier days. Meanwhile, this volume of essays (most of which were in course of preparation when war was declared) is issued as a *ballon d'essai*."

The volume contains seven essays, two by Dr. Singer—namely, The Scientific Views and Visions of Saint Hildegarde, and A Study in Early Renaissance Anatomy, with a New Text; the Anothomia of Hieronymo Manfredi, transcribed and translated by A. Mildred Westland; by J. W. Jenkinson, Vitalism; by Raymond Crawfurd, The Blessing of Cramp Rings; by E. T. Withington, Dr. John Weyer and the Witch Mania; by Reuben Levy, The "Tractatus de Causis et Indiciis Morborum," attributed to Maimonides; and by F. C. S. Schiller, Scientfic Discovery and Logical Proof.

To take the first of these essays, Hildegarde (1098–1180), popularly called Saint though she was never canonised, was a singularly able and remarkable woman. She was born in the Bingen country, entered the Benedictine house of Disibodenberg at the age of 8, and eventually rose to be abbess. In 1147 she and some of her nuns migrated to Rupertsberg, close to Bingen, where she passed the remainder of her life. Not all the works attributed to her are genuine, but of those that are genuine, her treatises Scivias (i.e., Scito vias Domini), Liber Divinorum Operum, and Liber Vitae Meritorum, are the main authorities for her views on science. These three books are all records of visions and they deal with the structure of the material universe, the macrocosm and the microcosm, the internal structure of the terrestrial sphere, anatomy, physiology, and the nature of the soul. Her idea of the universe, which she at first conceived as being oval in shape, was later modified and conceived as being circular. With regard to the earth she had a vague notion of "the inversion of seasons and climates in the opposite hemisphere," but this idea was more clearly grasped by her contemporary, Herrade de Landsberg, as shown by Fig. 5, p. 40, which is reproduced from Herrade's Hortus Deliciarum. This figure shows the arrangement as laid down by Virgil, Geor. I., 231 et seq., taken by him from Eratosthenes, except that Virgil's "zona torrida" becomes "zona perusta."

Space fails us to comment upon Hildegarde's views on anatomy and physiology, on the microcosm and the macrocosm, and the visions of the Scivias. With regard to these last Dr. Singer notes that many of the visions, as illustrated in the beautiful miniatures of the Wiesbaden Codex B, show the symptoms of the scintillating scotomata of acute migraine, the fortification type being particularly well marked. (See Plates XXIII.–XXV.) As regards the sources of Hildegarde's scientific knowledge, we would suggest that one of them was Philo Judaeus. There are many points of similarity between Philo's account of the universe as epitomised by Drummond [1] and Hildegarde's as epitomised by Dr. Singer, and as Hildegarde is known to have been familiar with the Jews (Singer, p. 20) it is quite likely that she became acquainted with Philo's treatises.

[1] James Drummond, LL.D.: Philo Judæus, or the Jewish Alexandrian Philosophy, vol. i., p. 267 et seq.

Dr. Jenkinson's paper upon Vitalism sets out many cogent objections to that doctrine, but although confessing our present ignorance, does not despair of eventually "attaining to a chemistry of life." Of the other papers we may mention that by Dr. Raymond Crawfurd upon Cramp Rings, giving an interesting account of the origin of the custom of the blessing, distribution, and wearing of these remedies. The term "cramp," according to the hallowing service, included all "contraction of the nerves or any danger of the falling sickness." The term "nerves" here, means muscles or sinews, and the word "cramp," as Dr. Crawfurd shows, probably included in popular terminology any complaint accompanied with painful muscular contraction or spasm—i.e., anything by which the patient was "tied up" or "set fast." Hence, we suggest, the use of the term "cramp" for a tie, used to brace timbers together. Dr. Withington's account of Dr. John Weyer and the witch mania is a reminder worthy of the man whose good deeds it celebrates. Weyer, who was a physician, together with our own Reginald Scott, were two men who, unfortunately in advance of their time, did their utmost to show the folly and wickedness of one of the most baleful superstitions that ever cursed civilised countries. Mr. Reuben Levy discusses the "Tractatus de Causis et Indiciis Morborum," a work on medicine attributed to Maimonides. He demonstrates by a careful examination of the manuscripts supposed to contain this treatise—namely Bodleian (Marsh, 379) and that in the Paris Liby., No. 1211, in Zotenberg's Catalogue, that the first is a work really written by Muhaddib ed Din Abu'l Hasan Ali Ibn Ahmad, of Bagdad, while the Paris MS., though it contains four genuine works of Maimonides, does not contain the Tractatus at all.

Altogether the volume is one of which the promoters of the scheme may well be proud, and, as is to be expected from the Clarendon Press, the printing and the reproductions of miniatures and engravings, whether coloured or not, are deserving of all praise.

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1. *Studies in Immunisation against Tuberculosis.* By KARL VON RUCK, M.D., and SILVIO VON RUCK, M.D. New York: Paul B. Hoeber. 1916. Pp. 239. Price $4.00.
2. *The Treatment of Tuberculosis by Means of Spengler's Immune Bodies (I.K. Therapy).* By NIVEN ROBERTSON, M.D. Edin., D.P.H. Camb. London: Baillière, Tindall, and Cox. 1917. Pp. 152. Price 5*s.*
3. *The Battle with Tuberculosis and How to Win It.* By D. MACDOUGAL KING, M.B. With one coloured plate and six other illustrations. London and Philadelphia: J. B. Lippincott Company. 1917. Pp. 258. Price 6*s.* net.

1. THE keynote to this book by Dr. Karl von Ruck and Dr. Silvio von Ruck is sounded in the words: "It may be condemned almost as much to withhold specific treatment from a tuberculous patient who might benefit from it, as it is to treat a case of diphtheria without antitoxin." In face of the wave of pessimism which has again overtaken tuberculin of recent years, this confident tone comes as a much needed spur to new efforts. But it is significant that this bulky work is apparently addressed, not so much to the specialist in tuberculosis as to the general practitioner. The authors' object is to "aid the general practitioner to understand and apply, in his own practice, the principles which govern the artificial production of bacteriolytic immunity in tuberculosis." This appeal to the busy general practitioner over the heads of the specialists, diffident and unconvinced as to the merits of present-day "artificial production of bacteriolytic immunity in tuberculosis," is the measure of the authors' faith in the comparative safety of their method. How great their faith is may be shown by the following: "There being apparently no danger connected with the administration of a suitable vaccine, it is not necessary, for its adoption, to await the concurrence or approval of all interested." And again: "Our method was published only after it had been proved effective and free from danger in a large number of individuals." Part I. (the first 112 pages) deals with the theories of immunity, an excellent digest being given of this subject. Part II. (pp. 115–231) is devoted to the practical application of artificial immunity, and is by far the most interesting section of the book. The specific products of tubercle bacilli on the market are classified as (*a*) tuberculins proper,

including old tuberculin, albumose-free tuberculin, Beraneck's tuberculin, &c., all containing exotoxins of tubercle bacilli; and (*b*) Koch's tuberculin R, BE, Landmann's tuberculol, and the authors' vaccine, all containing endotoxins of tubercle bacilli. The authors are not explicit about the details of the manufacture of their vaccine, but exhaustive information is given as to the method of administration, indications, contra-indications, and the like. For nearly five years they have given their vaccine as a prophylactic measure. They have also made extensive use of it in well-defined pulmonary disease. They claim (p. 122) that "a complete and effective immunity of the normal human organism against the tubercle bacillus ..... has been produced by ..... a single dose," and that early, uncomplicated, non-febrile cases of tuberculous disease have been apparently cured by one to three doses. They hold that marked focal and febrile reactions are not harmful, and that the latter cannot be prevented with certainty if the doses are increased "in a proper manner." It is interesting to find them quoting Koch, who, as late as 1908, personally assured one of them that he still believed the best results were obtained by doses of tuberculin large enough to cause decided reactions. They do not, however, advocate tuberculin in rapidly progressive febrile cases of pulmonary tuberculosis, for which they admit the lack of any effective remedy except, in rare cases, lung compression. With this and a few other simple reservations the authors seem to be pushing vaccine-therapy in tuberculosis as an almost fool-proof measure, and their estimate of its merits is practically as blind to faults and shortcomings as the average obituary notice. Part III. (pp. 285 to 421) is chiefly concerned with experimental studies in immunisation against tuberculosis. This book evidently represents an infinite amount of patient work carried out over many years. So contagious is the enthusiasm of the authors that the reader is apt momentarily to forget the thousands of disappointments associated with tuberculin.

2. Writers advocating a new form of treatment so commonly beat the big drum that the modesty and moderation with which Dr. Robertson discusses his subject is decidedly pleasing by contrast. He is throughout the critical judge, not the plausible advocate. His book first deals with the theory of I.K., then with its practice, and finally a critical analysis is given of the findings of the many other workers in this field. These are grouped according as they have found the effects of I.K. good, bad, or indifferent. The cynic might be tempted to suggest that if some famous physician in satirical mood were to puff distilled water under some cryptic title, say, B.F., the medical reports on its efficacy would be as varied as those collected by Dr. Robertson. He has sifted a mass of conflicting detail evidently in the hope that some wheat might be found among the chaff. But he remains a doubter, and he concludes his book with the verdict (p. 143):

"From a survey of the whole question, therefore, the conclusion is that I.K. is of value in the treatment of pulmonary tuberculosis, as the majority who have as yet used it speak in its favour, but there are some who have used it extensively and found it indifferent in its effects; and from my own results, I must place myself amongst those who regard it as of doubtful value as a specific remedy. In regard to the specific nature of I.K., I must conclude that the question is still not completely settled."

All who are interested in this subject will find Dr. Robertson's book a useful summary of the subject.

3. This book, as its title suggests, is written for the consumptive patient and his friends. The author, a medical man and a patient, writes with the inside knowledge of sanatorium life acquired by 18 months' residence in institutions of this class in Canada and the United States. As he says in his introduction, he has become increasingly convinced that the great number of deaths occur simply because the majority of patients do not understand "the reasons underlying the only treatment that will bring success." The reader, thirsting to master these reasons in a hurry, will find the author's style redundant and high falutin. He says, for example, that "Away goes the great army of germs, scattered broadcast like autumn leaves on the four winds of heaven." This flowery language becomes less irksome as the unworthy suspicion that it hides superficial knowledge gives way to the conviction, on further reading, that the author has indeed mastered a complex and much misunderstood system. In his eyes sanatoriums are not merely "first-class hotels," nor institutions the value of which is to be appraised by statistics; rather are they educational centres where the patient is born again, learning to readjust his whole method of life to the requirements of his body, and soul, too, for that matter. In fact, the author is at great pains to show how successfully the consumptive may fill his life with avocations unattainable while he followed his original vocation. To impress the reader with the importance of the action of mind on matter, the author has reproduced some of Crile's sections, showing the effect of fright on the brain and liver. These illustrations are calculated to give the lay reader an exaggerated impression of the changes effected in the body by the emotions. But this is a minor matter and, taken as a whole, the book is an admirable guide, showing real insight into human nature and intimate knowledge of tuberculosis.

The Practice of Pharmacy. Sixth edition. By JOSEPH P. REMINGTON, Dean of the Philadelphia College of Pharmacy, assisted by E. FULLERTON COOK, Instructor in Commercial Pharmacy in the same College. 816 illustrations. London and Philadelphia: J. B. Lippincott Company. 1917. Pp. 1987. Price 35*s.* net.

THIS admirable compendium of pharmacy appears in a new edition after an interval of ten years which have seen the introduction of a host of new remedies and processes as well as a further revision of the U.S. Pharmacopœia and National Formulary. The increased size is inevitable, as the book is intended to be the daily companion of the busy pharmacist, to be referred to for the making and dispensing of official, unofficial, and extemporaneous preparations. It also contains full descriptions of medicinal substances, their properties, uses, and doses. The book is, of course, based upon the U.S. Pharmacopœia, but B.P. preparations, when dissimilar from those official in the States, are included in tabular form. The metric system is adopted throughout, with alternative formulas in the older weights and measures. The early chapters on pharmaceutical processes and the various tables and glossaries will prove of great value for reference to any medical man or pharmacist. The index contains nearly 20,000 headings.

LIBRARY TABLE.

The Historical Register of the University of Cambridge. Being a Supplement to the Calendar, with a Record of University Offices, Honours and Distinctions to the Year 1910. Edited by J. R. TANNER, Litt.D., Fellow and formerly Tutor of St. John's College. University Press, Cambridge. 1917. Pp. 1186. Price 12*s.* 6*d.*—By Cambridge men—and how many distinguished members of our own profession such a category includes—this will be found an invaluable book of reference. The last issue of the Cambridge University Calendar in its old form was published four years ago and had reached unwieldy dimensions. The Syndics of the University Press accordingly decided to transfer the historical information, hitherto repeated in the annual calendars, to a separate publication to appear at longer intervals. In this volume the rearrangement of matter has taken shape, and will be found to give an opportunity for additions to the customary information in the yearly issues, while sections on the history and procedure in the university courts have been added. Considerable rectifications of the old Tripos lists have also been made, in which valuable work of correction the information contained in the Dictionary of National Biography has been of great service. With help from this source and with additions from the old Grace-Books it has been possible to extend the Tripos details backwards for 300 years, the honours lists now commencing in the year 1498.

The Cult of Old Paintings and the Romney Case. By RICKARD W. LLOYD. London: Skeffington and Son, Limited. 1918. Pp. 195. Price 6*s.* net.—Mr. Rickard W. Lloyd, consulting anæsthetist to the West London Hospital, has published an interesting note on the practical difficulties associated with the identification of the canvases of old masters; this is illustrated by photogravures of many well-known specimens of their art, and by reproductions of other pictures which may or may not deserve their suggested heredity. In an introductory section the more obvious

difficulties which attend the critic in the attempt to make attributions are well set out, and in particular the point that detective instinct can only be serviceable if backed by real knowledge is clearly made. The book was prompted by a notorious legal action last year, heard before Mr. Justice Darling, in respect of the claim for the return of £20,000 which had been paid for a picture wrongly stated to be a work of Romney, and a full epitome of the case is appended, extracted from the *Daily Telegraph*. A foreword by the President of the Royal Academy is a guarantee that controversial subjects have been raised by Mr. Lloyd with no undue polemical spirit, and we associate ourselves with Sir Edward Poynter's commendation when he states that the book "sets forth the difficulties and snares which beset the cult of old paintings in a way which is both interesting and amusing."

Wheels 1917. Oxford: R. H. Blackwell. Pp. 104. Price 2*s.* 6*d.* net.—A little over a year ago we reviewed with pleasure a collection of poems by a group of young writers which appeared under this title. The reception of the volume by the *Times*, *Morning Post*, and other lay and literary journals was even more favourable than any for which we could find space, having regard to the fact that our columns cannot be much used for any survey of general literature. But we made an exception in favour of "Wheels" because of the definite psychological attempt of the writers. Their inspiration, though they differed in style, technique, and accomplishment, was a common one; they strove to show that any impression, however fleeting and however intimate, when received by a person with the necessary gifts, ought to be communicable to others by the medium of symbolic word pictures. The present collection, while it revives the title and maintains the general outlook of its predecessor, is entirely new. Of the original nine writers seven—namely, Miss Iris Tree and Miss Edith Sitwell, who make solid advance both in what they try and what they give, Miss Helen Rootham, Mr. Osbert Sitwell, Mr. Sacheverell Sitwell, Mr. Arnold James, and the late Mr. E. W. Tennant, contribute to the present issue, while two new writers, Mr. Aldous Huxley, author of "The Burning Wheel," and Mr. Sherard Vines, author of "The Two Worlds," complete the spokes of the wheel. "Wheels 1917" is a distinct advance on "Wheels 1916." The second cycle is more responsible, the writers showing greater individuality and less general pessimism, and the standard has been raised by the two fresh contributors. For particular notice we may pick out a posthumous copy of *genre* verses by the late Mr. Wyndham Tennant, Miss Rootham's "Symphony," Miss Iris Tree's sonnet "Black Velvet," Miss Edith Sitwell's "Orchard Poems," Mr. Arnold James's melodious "Till the Morn Break," and Mr. Sacheverell Sitwell's "Barrel-Organs." The last named, represented in the 1916 collection, if we remember right, by one charmingly fantastic piece, now appears in far more serious guise, though his gifts are obscured by his unaffected sadness. Mr. Osbert Sitwell's prefatory note is a masterly piece of contemptuous bitterness, written on the immortal receipt of Mr. Michael Finsbury—"Anything to give pain"; if it is not quite fair, it represents with grievous shrewdness much that may well be said by his generation.

THE LANCET, VOL. II., 1917: THE INDEX.

OWING to the continued shortage in the paper-supply the Index and Title-page to the volume of THE LANCET which was completed with the issue of Dec. 29th, 1917, have been printed separately, and copies have been supplied gratis to those subscribers who have, up to Jan. 23rd, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C.2. Such applications should be sent in at once.

The Manager will be obliged if subscribers who have no further use for them will return to him their copies of the Indices to Vols. I. and II., *1916*. They should please be addressed to him as above.

New Inventions.

THE HARLEY HAMMOCK CRUTCH.

WITH reference to a new type of crutch which is being shown at the Royal College of Surgeons Exhibition a well-known authority writes:—

"Mr. Walter Clifford, a dental surgeon, has recently hit on the brilliant idea of applying the principle of the swing to crutches. A swing is hung between the cross-pieces of a pair of crutches in such a manner that a lame man sits all the time he is walking and can rest every few paces during his perambulations, thus saving much pressure under the arm-pits. The idea is very simple but had never occurred to anyone.

Crutches hitherto had remained almost unchanged among surgical appliances save that the tops of their staves below the cross-pieces had been divided into two halves subsequently to the time when the Renaissance painters depicted these supports of the lame in pictures, such as Raphael's 'Peter and Paul at the Gate Beautiful.'" The saddle which supports the weight of the body on the ischial tuberosities, and which can be easily raised or lowered to suit the stature of the user, is not clearly shown in the illustration, which otherwise gives a fair idea of the apparatus in use. A decided advantage of the crutch should be the acceleration of convalescence, as exercise in the open air can be taken much sooner and for longer periods at a time than is usually possible.

The crutch is manufactured and sold by Messrs. A. V. Gifkins and Co., 68, Victoria-street, Westminster, London.

CORNISH CENTENARIANS.—Mrs. Wendow, of Bridgend, Lostwithiel, died on Dec. 25th last, in her 102nd year.—Mr. W. Mugfur, of St. Sampson's, near Par, celebrated the 100th anniversary of his birthday on Dec. 26th last.

THE LANCET.

LONDON: SATURDAY, JANUARY 26, 1918.

Reconstruction as Applied to Medical Education.

ADMITTEDLY many things in our political and social schemes are awaiting recasting. Reconstruction is in the air, and is likely to receive no small impetus from the decision of the Upper House during the week that is past not to hinder the admission to the suffrage of something like eight million new voters. The present time is therefore specially opportune to consider the position of medical education in the light of new circumstances. On its domestic and economic side a profound alteration is taking place in the practice of medicine, and the question of necessity arises: Is the training of our students adequate in its aims or well directed in its purpose? Before the war we know it was not so, for even then we were talking everlastingly of reforming medical education. But were these ideas of reform themselves adequate? And do they not now need remodelling and reconstructing in the light of what we see ahead of us? Nothing certain can be said, and what changes are desirable must be themselves subject to further change in the light of experience; but many suggestions have been put forward, and others may well see the light, for it is by tentative solutions, which may be found in harmony with the many issues involved, that practical progress will be obtained.

Some such thoughts as these probably inspired the Edinburgh Pathological Club to institute an inquiry into the training of the medical student, and the first instalment of the discussion is before us in the pages of the *Edinburgh Medical Journal* for January, based upon opening addresses by Sir JAMES MACKENZIE on The Aim of Medical Education and by Professor JAMES WALKER on The Teaching of Chemistry to Students of Medicine. Sir JAMES MACKENZIE begins by stating the aim of medical education to be to enable the practitioner of medicine to detect disease and to recognise its dangers, and to instruct him how to prevent and combat them; and he goes on to lay stress on the importance of observation of the earliest stages of common ailments and of noting the insidious onset of disease in the body, betrayed, as it may be, only by such things as the loss of the habitual feeling of well-being or the countless elusive sensations arising before any evident sign of disease. Such considerations are familiar enough in theory and scattered discussion, but they are here presented in persuasive setting by a man who was a general practitioner, while he was carrying on his valuable and highly scientific research work. Sir JAMES MACKENZIE regards it as typical of the hospital practice both in this and other countries that a patient coming with no physical signs is put off with a bottle of medicine and told to come again. It was, indeed, hoped that such a practice, which has long been deeply resented by the more intelligent working-class patient, would be slain and buried by the arrangements under the National Insurance Act, but panel practice up to now has not had this result. When diagnosis is thus postponed until the appearance of physical signs, the period in the patient's history when his condition is not only the most difficult to estimate, but also the most hopeful for treatment is wilfully passed over. To him who has eyes to see them the earliest stages of disease are revealed by a threefold series of symptoms: first, those due to structural alteration of the organ concerned; secondly, those produced by impaired function, often evident alone in their remote effects on other organs; and, thirdly, phenomena arising from reflex effects upon the nervous system. For the first of the series of symptoms our medical student may upon passing his final examination be more or less prepared, but the practical physiology to which he has been introduced in his preliminary studies has in general been too crude to serve him much in dealing with the second and especially with the third of the series. Little, if any, provision has been made for a form of pathology which shall recognise the early morbid symptoms produced in the human subject. The man who at the conclusion of an ordinary course of medical study enters general practice finds that he has to start afresh, that is, if he wishes to understand his patients and to store wisdom and experience by re-educating himself on new lines for the tasks before him. Professor ARTHUR KEITH'S advanced lectures to medical men on applied anatomy are designed exactly to stop the gap we have indicated, and the medical education of the future should take care to fill the void permanently.

Professor JAMES WALKER, who followed Sir JAMES MACKENZIE, put his finger at once on a point of basic importance in the discussion—namely, that examination tests are a chief essential of medical education, and that for the purposes of examination it has been thought necessary by our predecessors to divide medical study into practically water-tight compartments, each with a separate organisation of its own, with the result that the student gains from his study no conception of medicine as a single and consistent whole. This is, indeed, the outstanding fault of much existing secondary education. At the end of his first year the medical student lays down his chemistry and physics for good and all, when the examiner is satisfied with the moderate quantum which the examinee has offered to him. The satisfaction of being quit of the subject has often been common to both. The same has happened a year later to anatomy and physiology, and again later on, if in lesser degree, to pharmacology and pathology. The student, in fact, to quote Dr. W. C. SILLAR in the discussion to which we have alluded, develops the extraordinary point of view that his study is essentially the preparation for an examination which is itself an elaborate piece of intellectual

gymnastics. Certain it is that the interdependence of all the subjects of medical study finds no adequate expression in our present schemes of training; there has been no dovetailing of subjects. An intelligent appreciation of chemistry forms an essential part of the examination of every patient and for the proper understanding of all morbid processes, and yet the establishment of a special chair of chemistry within the Faculty of Medicine at a particular university is regarded as a novelty, while the chair of physiology at another university has undergone resolution into bio-chemistry and experimental pharmacology. The pass to which we have come is fairly illustrated by the difficulty of getting teachers who are primarily chemists and at the same time graduates in medicine. All these are points deserving of earnest attention.

Turning now from the Edinburgh discussion to its wider application, an example or two may serve as illustrations. We have just received a handbook, prepared by the Health of Munition Workers Committee, the purpose of which is to set forth in categorical form the steps necessary to maintain the health and efficiency of the worker. No medical subject could possibly be of greater interest at this or at any other time. The maintenance of the health of the worker affects a huge proportion of the total population of the country; it is obviously the largest single problem confronting medical science. In the realm of industrial life medicine is just beginning to take its proper place. But is the medical student as he leaves the hands of his teachers equipped for such a study? The handbook will be for him a medical text-book, fascinating, no doubt, but of a new and unfamiliar kind. It is not arranged, like the system of medicine, under topographical headings or the various types of bacterial infection. It does not even follow the more primitive arrangement of a text-book of preventive medicine, beginning with the "elements" of air, water, fire, and the like. Reference to the index reveals such items as efficiency, fatigue, nutrition, rhythm, staleness, irritability, breaks, spells, and pauses. These are the subject headings of the new industrial medicine, and to the student who has laid aside at an early stage of his studies the subjects of chemistry, physics, and physiology, these terms are almost meaningless. The sooner our educational authorities recognise this fact the better it will be for the status as well as for the efficiency of medicine.

The Immediate Closure of Gunshot Wounds.

Sir ALFRED KEOGH has more than once pointed out that the well-recognised principles of closing wounds equipped with which the civil surgeons went to the front found little or no application to the types of wound which they found there. This has been, indeed, the great surgical tragedy of the war. The surgeon had to accept the fact that with the trifling exception of a few perforating rifle-bullet injuries all gunshot wounds suppurated, and their healing consequently demanded the sacrifices of time, material, and vital energy inherent to closure by second intention It is now a commonplace to state what notable advances were made on this position by the researches of Colonel Sir ALMROTH WRIGHT and by ALEXIS CARREL in his elaboration of a method of mechanical cleansing followed by intermittent flushing, with the result that most wounds could be secondarily sutured within a period of five or ten days. Professor RUTHERFORD MORISON'S application of bismuth iodoform paste made it possible in some cases to carry out such secondary closure at a still earlier stage. But neither method gave uniformly good results nor rendered possible the immediate closure of the gunshot wound on the lines of an aseptic operation, with the saving of life, time, and material which that would imply.

The surgeon has not willingly acquiesced in this disability, and the impression is steadily gaining ground that the first essential in the treatment of gunshot wounds of any region consists in the removal of all dead and infected tissue, after which the wound can be closed with safety. Such a wound excision to be successful must be both early and complete. Early, inasmuch as 12 to 15 hours after its infliction pathogenic organisms have already begun to multiply in the wound and to invade the surrounding tissues; sometimes, alas, even sooner than this. Complete, in the sense of a careful dissection of the wound, including the paring of the skin edges, the removal of all foreign bodies—whether missile, mud, clothing, or bone splinters—the excision of injured tissue, such as muscle or fascia, and careful hæmostasis to avoid the subsequent collection of clot within the wound. So much may be said already, but much still remains to be done before the immediate closure of gunshot wounds can become the routine procedure. Many new methods are still on their trial. One of the simplest is a solution of common soap applied after excision of damaged tissues. First used by French surgeons, and recommended by Colonel CUTHBERT WALLACE, this has been employed with success by Captain R. G. DIXON and Captain H. T. BATES,[1] and more recently by Captain J. B. HAYCRAFT.[2] M. LE GRAND and other French surgeons[3] have attempted by means of a staining reaction to delimit the tissues which require to be excised. The general principles of wound closure claimed the attention of the Paris Inter-Allied Surgical Conference (see p. 160), and research work of this kind might well claim the special attention of the whole staff of a casualty clearing station, if it has not already done so.

But even so, the sphere of useful research has not been exhausted. Just as secondary suture has claimed the close coöperation between surgeon and bacteriologist, so the responsibility for the immediate closure of the wound may well be shared by both. CARREL states that nearly all the cases of septicæmia which he has seen followed on "unseasonable" suture of the wound, and until the general principle of immediate closure is well established it is for the bacteriologist to advise the surgeon of the safety of the proceeding in the

[1] THE LANCET, 1917, ii., 789.
[2] Brit. Med. Jour., 1918, i. 80.
[3] Soc. de Chirurg., Dec. 5th, 1917, and THE LANCET, 1917, ii., 96.

particular case. A streptococcus producing hæmolysis is one of the organisms which may give rise to difficulty. In his study of the bactericidal effects of leucocytes in the wound, which we print in another part of this issue, Sir ALMROTH WRIGHT describes artificial conditions which he has devised, imitating closely the actual wound conditions with which the surgeon has to deal. To meet present needs bacteriology, like surgery, must be plastic and freed from all hampering prepossessions. In "bio-pyo-culture" the bacteriologist is working closely hand-in-hand with the surgeon. More even than this is required if immediate closure of wounds is to become a practical reality. At present it is not considered safe for a surgeon to undertake a primary suture at the front and then to send the case down to the base, inasmuch as jolting on the journey may cause commotion in the wound and hinder the proper course of healing. Wounds, like bones, seem to require splinting for their proper recovery, and facilities of accommodation and of transport are needed unless we are to remain content with the *suture primitive retardée* at the base. Our Paris Correspondent shows (p. 155) how a group of French surgeons dealt with the situation during an attack. No combined effort can be too great to realise a preventive treatment of gunshot wounds equivalent to the preventive orthopædics of which we have recently spoken.

Annotations.

"Ne quid nimis."

POOR-LAW GUARDIANS AND THEIR FUTURE.

NINE years ago the Royal Commission on the Poor-law, Majority and Minority Report alike, recommended sweeping changes in the position of boards of guardians, and although these bodies still survive the Reconstruction Committee, to whose report allusion is made in our Parliamentary Correspondence, confirms the need for drastic change. In the meantime boards of guardians have been discussing their own future in a recent number of the *Local Government Chronicle* in reply to a short series of questions upon the subject of their possible abolition and of the transference of the functions comprised under the term "Poor-law administration" to other bodies. Destructive self-criticism could not be expected from persons who have, perhaps frequently, submitted to the ordeal of popular election in order to devote time and trouble to public duties of a more or less onerous character, and naturally few answers, if any, in the affirmative have been returned to the first question put: "Is there any foundation for the suggestion that the abolition of boards of guardians is desirable?" The replies which have been published are, however, from those who, not returning a mere "Yes" or "No," were sufficiently interested, or found the necessary leisure to give their reasons; and, subject to the suggestion made above that a certain amount of prejudice in their own favour may excusably have coloured their views, they have answered perfectly fairly. And they are persons qualified to speak from experience as to the work which they are doing and to compare it in the light of that experience, of traditions, and of their own records with that done by their predecessors. They have also full knowledge of their powers in comparison with those exercised by guardians in the past, and can appreciate expectations of increased opportunities for usefulness. To the question which we have quoted above the reply is in all the examples published an emphatic and uncompromising negative. A second question, relating to the general views of guardians as to the performance of their duties, the chairman of the St. Marylebone board of guardians answers as follows:—

> The great improvement in the administration of the best Poor-law unions of recent years is evidence of the efforts of Poor-law guardians to do their work well and of their success. The extent of the hard work voluntarily undertaken and carried through is little known.

This may be taken as summarising the majority of the opinions expressed; no exception can be taken to it, for allowance may fairly be made for improvement effected when the future of boards of guardians is considered. Stress, too, may reasonably be laid upon advantage willingly taken of increased powers and of the encouragement received from modern public opinion. The chairman of the West Bromwich union puts the case thus:

> All the best of the recommendations of the Royal Commission have been carried out. Boards have effected under their extended powers such great improvements that the grounds upon which the Commission made their recommendation for the transfer of the duties of guardians to other authorities have ceased to exist.

The modern development of the Poor-law infirmaries, the treatment and nursing provided in them, and all that such development means to those who by their circumstances are compelled to have recourse to them, are dwelt upon with pride in many of the replies given, and here also it cannot be said that the satisfaction expressed is unreasonable. The contrast between the infirmary of to-day and that of a generation or of two generations ago may be, and probably is, more conspicuous than that observable in any other department of Poor-law administration, and the usefulness of such practical progress, as setting an example of humanity, has no doubt made its influence felt rather than recognised. It is a progress which the medical profession may justly ascribe in no small degree to the efforts of its members, and which it may regard as a result of the general development of medical science, and as proof of public acknowledgment and appreciation. On the whole the replies obtained by the *Local Government Chronicle* constitute an interesting contribution to the accumulating literature on this subject, and it may be added that they do not overlook the all-important question as to how far the public will tolerate the handing over of the expenditure of its money to authorities wholly or in part irresponsible, in the sense of not having to seek election or re-election at its hands.

A NEW KIND OF SELF-INFLICTED INJURY.

Professor Ascarelli has recently drawn attention[1] to a form of lesion resorted to by recruits in order to evade military service which he thinks has hitherto escaped general observation. It is most frequently met with as a periarticular condition in the knee, ankle, or wrist, and presents the appearance of a uniform or nodulated swelling,

[1] Il Policlinico, Practical Section, Nov. 25th, 1917.

having a bluish-red mottled tint, slightly hot to the touch. Palpation discovers that the swelling is strictly limited to the soft cutaneous or subcutaneous tissue and is made up of large nodules varying in size from a nut to an apple, of round, oval, or irregular shape, and hard elastic consistence. These nodules are freely movable over the subjacent tissue and adherent to the overlying skin, which is involved in the process by slight inflammatory signs; they do not change their shape after hot fomentation or massage, and are not painful when scientifically tested, except in the early stage of their evolution, despite the fact that for obvious motives pain is generally complained of. As the result of his investigations, and from the confessions of the patients, Professor Ascarelli is able to affirm that these nodules are produced by the single or repeated injection of mineral oils, especially liquid paraffin. About 2 c.cm. is injected deeply and is not absorbable, producing a limited inflammatory action in the tissues, almost always without sepsis, and resulting in an area of induration and permanent sclerosis, all trace of the puncture speedily disappearing. The absence of any general symptoms, the characteristic and strictly localised appearance, and the course of the lesion render the condition so typical that it cannot be confounded with any other, such as cellulitis, bursitis, or autoconstrictive œdema. It constitutes no bar to active service, but the question of ultimate absorption of the nodules has as yet not been satisfactorily determined.

AN EPIDEMIC OF TYPHUS IN POLAND.

To the list of the calamities that have lately befallen the unfortunate inhabitants of Russian Poland there has to be added a very serious epidemic of exanthematic typhus. This began towards the latter part of 1916, and it has continued unabated up to the end of 1917—that is, for rather more than a year; the chief area affected by this disease has been the government district of Warsaw, including the city of Warsaw, the capital of the State. This district is now occupied by German troops and is being administered as German territory. From the weekly returns published by the Central Imperial Health Department at Berlin it appears that up to Nov. 24th no fewer than 26,099 persons had been attacked by typhus in the government district of Warsaw, and that 14,933, or 57·2 per cent., resided in the city of Warsaw. Fortunately, the fatality of the disease has not been high; 2080 deaths were recorded, of which 1178, or 56·6 per cent., occurred in the city. The epidemic shows no signs of abating, the number of cases in the last-received return—namely, that for the week ended Nov. 24th—being 827, the largest number yet reported in any week since the epidemic began; of the 827 cases 506 were referred to the city of Warsaw. The previous seven days yielded 737 attacks, of which 440 were in the city. Poland is a recognised endemic area of typhus, but examination of the records for many past years fails to discover evidence of any previous epidemic of the disease of such large proportions as that of 1917. For the last 10 years in the whole of Russian Poland, with a population of about 13 millions, the average number of reported typhus fever cases was 1887 annually. But, as has been already mentioned, 26,099 cases were reported in about 12 months in the Warsaw government district, which has a population of only 2½ millions, 853,000 of whom reside in the city of Warsaw. The reports published by the German Central Imperial Health Department make no mention of the measures that are being employed to control the epidemic, but whatever they may have been they seem to have failed to check the spread of the disease. The prospects for 1918 do not appear to be very encouraging, more particularly so long as the cold weather lasts in Poland. In 1917, however, the arrival of the summer seemed to have little or no effect in reducing the number of attacks. No doubt, the disease in the Warsaw district, as elsewhere, is associated with poverty, dirt, vermin, overcrowding, and what is known as "general misery," all of which are likely to continue so long as the war lasts, and perhaps longer.

SCOTTISH MOTHERS AND CHILDREN.

UNDER this title Dr. W. Leslie Mackenzie, medical member of the Local Government Board for Scotland, has compiled a document of intense human interest which has just been issued by the Carnegie United Kingdom Trust as the third—and only remaining—volume of the Report on the Physical Welfare of Mothers and Children. The interest of such a subject is obvious to all, but has too often been obscured by the statistical method of the social reformer. Dr. Mackenzie has included in his great work numerous tables, but has strictly subordinated them to the purposes of illustration and persuasion. The report on special regional studies gives first-hand records of living experience, and as such will be of permanent value as a picture of certain phases of the social life of our time. That many of the phases described may be transient is the ardent wish of those whose work has made possible the compilation of this volume. Its publication will count as a landmark in the history of maternity and child-welfare.

MINISTRIES OF HEALTH.

HYGIENIC reconstruction is a dominant thought in other countries than our own. The 600 medical men who, along with Cabinet Ministers and numerous University delegates, attended a Health Congress at Budapest last autumn, unanimously regarded the setting up of a Ministry of Health as the most pressing need of the moment. Professor Baron Müller in speaking of the rebuilding of a new Hungary said that it could only be done with the advice and coöperation of the medical profession, and that the head of the new Ministry must be a medical man in charge of a department itself, no mere appendage of other Government offices. For himself he regarded State Medical Service as a no less essential factor, and the organisation of a system of district sanitary inspectors provided with ample laboratory facilities. Other speakers who followed him dwelt on themes familiar to our own domestic policy. Professor von Liebermann spoke of the tremendous importance of mothercraft education as a compulsory subject in girls' schools. Professor Tauffer instanced the Stefanie-Bund, which has collected in half a year 5½ million kroners for maternity and child welfare. Of 17,000 children born alive in Budapest 13,000 were under the care of voluntary workers attached to this association. Seven infant welfare centres had been opened in the city, as well as a central milk kitchen. Steps were now being taken to divide the country into regions, each with an allotted number of welfare workers. The

education of these workers has been taken over in Hungary by the State, which prescribes three months' training for the probationer and 12 months for the directing worker.

CONVERSION AND BUILDING FOR WORKING-CLASS DWELLINGS.

THE question of housing accommodation, already acute, will become urgent with the beginning of demobilisation. The returns made to the Local Government Board indicate the intention on the part of local authorities in England and Wales to build some 150,000 new houses if financial assistance is provided them for the purpose. Other possibilities of increased accommodation are present. The Mansion House Council on Health and Housing decided recently that a report should be prepared for its consideration and sanction, with a view to ascertaining to what extent large houses now unlet, or in many cases unlet, can be converted by suitable alteration into homes for the working classes. Apart from the statistical and local side of the subject, involving questions as to the number of houses which might thus be treated in the London area and the extent of the demand for healthy and sanitary dwellings for the metropolitan working population, a more or less exhaustive, authoritative, and thoroughly practical treatise upon the essential details of such conversion of good-sized houses into small tenements should be of considerable value to public authorities in other large towns besides the metropolis. The dividing up of houses, as indicated, has been for many years a source of profit to those whose only interest has lain in securing a remunerative return for money invested. To some of these the health and comfort of their tenants have been matters of indifference, and the tenants themselves have been compelled by the circumstances of their work and by difficulties of locomotion to accept whatever was offered them. If the landlords in such cases were the public authority carrying out a public duty to the citizens the position would be different: indeed, to speak generally, it is only in the case of a public authority doing its work in a practical manner, economically but without parsimony, that conversion as distinct from building is likely to prove of public value. Under a public authority conversion would not have to be carried out regardless of profits, but only with a view to profits of reasonable dimensions, and the local authority should find little difficulty in safeguarding itself from loss, in providing against the deterioration of its property, and in paying interest upon borrowed money amply secured. In and round London and many provincial towns there are large houses built by citizens of the wealthier classes of a by-gone day whose descendants do not care to live in neighbourhoods the amenities of which have long ceased to exist. It may be sad to see such houses serving as tenement-dwellings, but it is better than seeing them falling into decay and practically useless; and better also than seeing them wastefully levelled to the ground, while full of potential value, in order to make room for new buildings, whose costly erection necessitates high rents. The large kitchens and offices of these old houses are often capable of ready adaptation for communal use, and although considerable changes may be necessary in the case of reception-rooms, the erection of strong and fireproof partitions at a small cost, so as to form rooms of moderate size, is an easier operation nowadays than it was even a few years ago. The spaces surrounding such houses, moreover, are as a rule sufficiently extensive to secure satisfactory conditions of light and air. In the hands of energetic and careful public bodies the carrying out of the policy suggested by the recent resolution of the Mansion House Council on Health and Housing might be made of great value. Similar operations conducted by individuals for the sake of personal gain have no doubt had as their result in many instances the production of most undesirable rookeries.

ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

COLLAPSE therapy as the one hopeful method of active interference in advancing pulmonary tuberculosis continues to attract attention in many countries. In the *American Review of Tuberculosis* (Vol. I., No. 9) the first three contributions deal with the subject of induced pneumothorax. Each of the first two writers draws on an experience of more than 100 cases, and they supplement their personal observations by reviews of the voluminous literature on this subject. The first writer, Dr. William N. Beggs, is convinced that the treatment should be adopted earlier in the disease than has hitherto usually been the case; but he qualifies this opinion with the warning that, as an effusion occurs in every other case, the anticipation of this complication should deter the physician from an indiscriminate selection of early cases. An effusion, as he points out, may be practically harmless, but it is apt to interfere greatly with the ultimate re-expansion of the lung. His generalisation, that this re-expansion is followed in every case by obliteration of the pleural cavity, does not hold good in our experience, for though the pleural surfaces usually become adherent when they again come in contact, we know of patients who have had their treatment successfully renewed after an interval of several years. It is comforting to find that Dr. Beggs has never experienced gas embolism. The second writer, Dr. Charles L. Minor, is also favourably impressed by collapse therapy, which, as he says, is practised by "most of our phthisiotherapeutists." He, too, has escaped fatalities from air embolism, the one case he observed showing only transitory symptoms. The immunity of both writers from fatal accidents is evidently due to attention to technique, and their experience confirms the growing impression that a large proportion of the fatalities recorded must be traced to want of knowledge or inattention to detail. The writers of the third article, Dr. M. I. Marshak and Dr. J. W. Craighead, deal with the development of spontaneous pneumothorax in the course of the induction of an artificial pneumothorax. This complication appears to be much more common than was supposed a few years ago.

THE appointment of Dr. Frank Cole Madden, professor of surgery, Egyptian Government School of Medicine, and senior surgeon to Kasr-el-Ainy Hospital, Cairo, as Honorary Medical Adviser to His Excellency Sir Reginald Wingate, G.C.B., High Commissioner for Egypt, has been approved by the Foreign Office.

WINSLEY SANATORIUM FOR TUBERCULOSIS.—During 1917 the in-patients admitted numbered 437, the daily average number being 97·8.

STOVAINE COMBINED WITH TWILIGHT SLEEP IN GYNÆCOLOGY.

BY F. L. PROVIS, F.R.C.S. EDIN.,
SURGEON TO CHELSEA HOSPITAL FOR WOMEN, ETC.

THE use of stovaine as an analgesic in the practice of gynæcology has not been adopted to any great extent in this country. On the perusal of the British gynæcological literature I have been unable to find any mention of the subject. Its use and value in other branches of surgery are well known.

Gynæcologists in other countries have used it very extensively for some years past, and in America, where it was first adopted by the general surgeons, and at that time viewed with suspicion by the gynæcologists, it has now been widely adopted by the latter. The former, on the other hand, have practically discarded its use as an anæsthetic. The reason for this is not difficult to comprehend, for, as we shall see later, the Trendelenburg position so necessary for pelvic operations is admirably adapted for stovaine anæsthesia.

My attention was first attracted to the value of stovaine in the case of a soldier who was operated upon by Mr. S. G. MacDonald in the Italian Hospital for an "acute abdomen."

Three months previously the patient had been shot in the abdomen, causing multiple injuries to the intestine, from which he had apparently completely recovered. Suddenly he developed acute abdominal pain, with fæcal vomiting and marked abdominal distension, with rapid and weak pulse. The administration of a general anæsthetic would probably have been just sufficient to have brought about a fatal termination to the case. Stovaine was injected and the abdomen opened. Some foul fæcal-smelling fluid escaped, and the intestines were found densely matted together as the result of the past injury, together with patches of dense lymph-formation on the surface of the bowel. No perforation could be detected. Drainage-tubes were inserted and the abdomen was closed. I saw the patient, who made an uninterrupted recovery, 36 hours later, and was so much struck with the result that I decided to use stovaine in certain of my own pelvic cases.

Description of Method.

The method I first adopted (with the exception of the first two cases) was to give a hypodermic injection of morphia 1/6 gr., atropine 1/160 gr., and hyoscine 1/100 gr. one half-hour before the operation, followed immediately before operation by the injection into the subarachnoid cavity of 0·6 c.cm. of a 10 per cent. solution of stovaine in normal saline. With this method, though frequently the patients were drowsy, they were in the majority of cases in a state to know what was going on. Many carried on a conversation with the anæsthetist or surgeon during the operation, though on the following day they had little or no recollection of their operations. The results of the operations were excellent. The patients had no shock, and, owing to the absence of all abdominal movement and the complete relaxation of the muscles, the operations themselves were rendered much easier and quicker in their performance. The objection to the method appeared to be the consciousness of the patient. I therefore decided to endeavour to induce a condition of "twilight sleep," my main object being to induce sleep during the time of the operation, and if I could not succeed in this, at least to produce such a mental condition of the patient that she would remember nothing of the operation, and I think from the results I am now publishing there can be no doubt of the success of the procedure in the vast majority of the cases.

The following routine was therefore adopted:—

Two hours before operation a hypodermic injection of 1/200 gr. of hyoscine was given, followed one and a half hours before operation by a second injection of hyoscine 1/100 gr., together with morphia 1/6 gr. and atropine 1/160 gr. Immediately preceding the operation 0·5 to 0·7 c.cm. of a light solution of stovaine in normal saline was injected into the subarachnoid cavity between the second and third, or third and fourth, lumbar vertebræ. After the injection of the stovaine the patient was blindfolded, cotton-wool was placed in the ears, and she was told that she would go to sleep.

The results were very satisfactory, but sleep was not always induced, though in nearly every case amnesia occurred. I therefore slightly modified the amount and time of the injections. Thus, I now give 1/200 gr. of hyoscine one and a half hours before operation, followed three-quarters of an hour before operation by an injection of morphia 1/4 gr., hyoscine 1/100 gr., and atropine 1/160 gr. With this routine the most perfect "twilight sleep" can be obtained, and though every now and then it may be found wanting both in inducing sleep and amnesia, as in Case 8 of my series, nevertheless in the vast majority—indeed, in practically all properly selected cases—the method will be found perfect both from the patient's point of view and that of the operator. In some cases it will be found necessary to give a small amount of open ether, generally not more than a drachm, to induce sleep. On returning to bed the patients continue to sleep for some three to six hours, and on awaking it will be found that sensation and power of movement of the lower limbs have returned, and that they know little or nothing of what has taken place after the injection of the stovaine; indeed, it not infrequently happens that a patient asks when she is going to be operated upon. Nourishment can be administered at once, and if the patient so wishes it she can see her relatives or friends within an hour or so of the operation.

Details Necessary to Ensure Success.

For the success of this method of anæsthesia the following details must be strictly adhered to:—

(*a*) *Selection of cases.*—Patients subject to severe headaches should not be given stovaine. In highly nervous neurotic individuals and patients with a markedly low pressure it is better to have a general anæsthetic administered, though in the former, if the twilight sleep is successful, many of the cases do admirably.

(*b*) A skilled operator should be employed to inject the stovaine and to watch the patient throughout the operation. Abortive attempts to enter the spinal canal with subsequent success cause pain and apprehension on the part of the patient resulting in failure in the process of twilight sleep.

(*c*) No talking and the least possible noise should be permitted in the operating theatre or room.

(*d*) The patient should be kept quiet and undisturbed in a darkened room for at least half an hour before operation. This is not always possible in hospital, but the patient can be screened off in the ward, which will serve the same purpose in the majority of cases.

Technique of injection of stovaine.—This is now so well known that it is unnecessary to go into details regarding it except to say that scrupulous asepsis should be observed and there should be no contamination of the stovaine solution with any foreign material. Care should be taken to hold the needle by its distal end so that no portion of the needle which enters the patient is touched by the operator's fingers. As regards the site of the injection this should be immediately below the spinous process which is not always in the middle line; especially is this the case with the patient reclining on her side. The quantity injected varies according to the anticipated duration of the operation; in my cases it has varied from 0·5 to 0·7 c.cm. of the solution. The light solution should be used. The advantages claimed for this solution are that it will float in the cerebro-spinal fluid and consequently the patient can at once be placed in the Trendelenburg position without fear of the special centres in the medulla oblongata being affected.

Advantages of the Method.

The advantages of this method of anæsthesia may be enumerated as follows:—

Practical absence of vomiting.

Patient can take nourishment almost immediately after operation, from which follows a more rapid convalescence.

Diminished abdominal distension following operation.

Absence of dread of having an anæsthetic as ordinarily understood by the patient.

Diminished liability to ventral traumatic hernia owing to absence of straining following operation.

Absence of all abdominal movements.

Complete muscular relaxation.

Diminished length of abdominal incision.

The last three factors tend materially to diminish the duration of the operation and to render the same easier in its performance.

Disadvantages of the Method.

The disadvantages of the method may be enumerated as follows:—

Toxic vomiting.—This sometimes occurs some 15 to 20 minutes after the stovaine has been injected. As a rule it is not serious or troublesome, and passes off in a few minutes, being quickly relieved if necessary by giving a drink of water.

Vaso-motor dilatation of the splanchnic vessels causing very marked pallor with a weak pulse. The pallor of the patient is most striking, and at times may appear very alarming, especially if at the same time the pulse becomes weak and of poor volume. The condition, however, appears more alarming than it really is. The placing of the patient in the Trendelenburg position as a rule successfully rectifies this condition, and this overcomes the greatest objection to the use of stovaine as an anæsthetic—namely, distension of the splanchnic area with blood due to vaso-dilatation. Should further measures be necessary pressure should be applied to the abdomen, the legs should be brought into line with the body, and strychnine or pituitary extract administered hypodermically.

Headache.—This symptom is an undoubted disadvantage; its not infrequent occurrence cannot be denied, and in a few cases is serious. Headache is a very common complaint after any form of general anæsthesia, a fact which should be borne in mind when considering this symptom as one of the disadvantages of stovaine administration. The pain is usually situated in the occipital region and in the nape of the neck, and as a rule is not severe. Patients subject to headache should not be given stovaine. To obviate its occurrence the foot of the bed should be raised on blocks for 36 or 48 hours following operation, and when it occurs it is usually successfully relieved by aspirin, bromide, or some allied drug.

Retention of urine following operation is certainly not more common after stovaine injection than after the administration of a general anæsthetic; if anything, it is less after the stovaine.

Albuminuria.—The urine frequently contains a trace of albumin 24 hours after operation, but this rapidly clears up. This also very frequently occurs after a general anæsthetic.

Trophic ulcers.—There is one other complication which may apparently follow the injection of stovaine, and that is an ulcer, probably trophic in nature, situated over the lower end of the sacrum and the upper part of the coccyx. Such a complication has never arisen in any of my own cases, but I have seen and heard of it occurring in the practice of others, and I think it only right to mention it. The patients have generally been thin, ill-nourished individuals. The skin first becomes red, and this is sometimes followed by definite ulceration. Tactile sensation over the sacrum and coccyx in one case I saw was undoubtedly impaired—indeed, in places there was complete anæsthesia. Once formed, the ulcer pursues a very chronic course, and is difficult to heal. The probable cause of such an ulcer is pressure arising from the position of the patient on the operating-table, and since seeing such cases I have adopted the precautionary measure of having an air cushion placed under this region during the operation.

The schedule of 100 cases submitted * in support of the thesis comprises practically every operation in gynæcology. The majority of the cases have been performed in various hospitals, and I would like to take this opportunity of expressing my appreciation and thanks for the valuable assistance rendered by the anæsthetists at these hospitals—namely, Miss G. Brooks at the Chelsea Hospital for Women; Mr. J. D. E. Mortimer, of the Royal Waterloo Hospital for Women and Children; and Dr. C. F. Hadfield, of the Prince of Wales's General Hospital, Tottenham. I would also like to express my thanks and appreciation to the sisters-in-charge of the various wards for their careful notes and observations upon the cases under their respective cares. This assistance has been invaluable.

* The schedule which accompanied this paper is omitted out of necessary consideration for space; it confirmed in detail the author's generalisations.—ED. L.

THE LATE THOMAS LINNINGTON ASH, L.R.C.P. EDIN., M.R.C.S., J.P.—Mr. T. L. Ash died recently at his residence, Holsworthy, Devon. The deceased, who qualified M.R.C.S. and L.R.C.P. Edin. in 1858 and 1859 respectively, for many years had an extensive practice in Holsworthy and district. He did much for the welfare of the town, and was highly respected. He was on the commission of the peace for the counties of Devon and Cornwall and a member of the Devon County Council.

TUBERCULOSIS.

The Purpose and Place of the Farm Colony.

THE discussion held by the Tuberculosis Society at the house of the Royal Society of Medicine last Monday evening will have served a useful purpose in clarifying the minds of those present in regard to the place of the farm colony in the general scheme of the treatment of tuberculosis. We may begin by recalling that Lieutenant-Colonel G. Sims Woodhead recently in these columns claimed the farm colony as an institution meeting all present requirements better and more completely than any scheme that has yet been brought forward. The general consensus of opinion, however, at the discussion was not as favourable as this. Sir R. W. Philip, who proposed 20 years ago the formation of a farm colony in association with his Edinburgh scheme, which actually took shape in 1910 at Lasswade, claimed two tangible advantages for the colony: (1) a large increase in the percentage of permanent benefit, as compared with ordinary sanatorium treatment—60 per cent. of the colonists were alive and in good condition five or six years after discharge; and (2) diminished cost, inasmuch as the average weekly cost of the colonist, even during an expensive war year such as 1916–17, amounted only to £1 2*s.* 6*d.* Dr. Noel Bardswell, in congratulating Sir Robert Philip on this modest figure, attributed it rather to simplicity in building and equipment and in the machinery of management than to the profitable character of the farming. But Sir Robert Philip himself and others who followed him had much stress to lay on the necessity for careful selection of cases for farm colony treatment, such necessity obviously being neither more nor less than an admission of the limited scope of the treatment. Mr. A. H. Macpherson, who after directing the colony at Lasswade from its commencement, has for the last three years been in charge of the large Hairmyres Colony in Lanarkshire, stated his experience that no colony could be successfully run unless the inmates are all able to work an average of seven to eight hours a day, a condition which, as Dr. Esther Carling rightly said, rules out a large proportion of even the more favourable sanatorium cases; and Dr. Jane Walker gained general assent for her rejoinder that the farm colony on such lines could only touch the mere fringe of the tuberculosis problem. The name "farm colony" itself came in for sharp criticism, on the ground that farm work proper, including ploughing, pitching, and the carrying of sacks, is never appropriate for the tuberculous patient, whose métier is more that of market gardening or work on a small holding or allotment, including poultry and rabbit keeping. The term "training colony," or more generally "health colony," was preferred; the former, we think deserving of preference in view of the fact that at a recent conference Sir A. Griffith-Boscawen threw out hopes of liberal financial help for training in regard to discharged ex-service men sent to farm colonies. Dr. Bardswell has pointed out recently that without considerable training agriculture and the like pursuits offer the consumptive scant hope of a livelihood, and the difficult question of the economic aspect of the colony claimed some attention at the discussion, where an interesting account was given of a successful consumptive workshop on a small scale where girls were able to earn 10*s.* a week at embroidery, which found a ready market, and of a dressmaking workroom elsewhere. One great difficulty, which resulted also in the premature closing of an experimental garden colony for consumptives at Leicester last summer, is the fact that the most suitable type of farm colony patient, i.e., the man fit for five hours' work or more a day, soon desires to go out and earn the good money awaiting him owing to shortage of labour outside. Such difficulties did not operate with the same force in Mr. J. E. Chapman's successful experiment of a market garden colony at Coppin's Green in 1907-08. Altogether the outcome of the discussion was one of hopeful but chastened expectation as to the place of the farm colony. The scope is more limited than that of the ambitious scheme of Garden Cities for Consumptives drawn up some time ago by Dr. J. E. Esslemont.

An Antituberculosis Institute for Paris.

THE need for the coördination on right lines of antituberculosis effort is being widely felt in many countries.

We have received through Dr. Arthur Lynch, M.P., an article by M. Danysz, of the Pasteur Institute in Paris, giving expression to this need. Although, he says, the work of Villemin more than 50 years ago assigned tuberculosis a place among the infectious diseases, progress in its prevention and treatment has been much less noticeable than in the case of cholera, plague, typhoid, and yellow fever. He accounts for the exception shown by tuberculosis to the general rule by recalling (1) the relatively slow evolution of the disease; (2) the ubiquitous character of the infection both among human beings and domestic animals; and (3) the fact that no effective method has yet been found of immunisation. But inasmuch as we know the infecting organism and its properties, as well as the directions in which further work is desirable, Dr. Danysz suggests the desirability of centralising the further study of tuberculosis in the following way:—

Créer un Institut spécial pour l'étude de la tuberculose dont les travaux devraient être organisés de façon à ce que les efforts de tous les collaborateurs puissent concourir au même but. Pour que tout en laissant à chacun la plus grande liberté d'initiative et des moyens d'action, chaque travailleur puisse mettre immédiatement à profit les découvertes de ses collégues; pour que les résultat des recherches de chacun puissent être le plus rapidement possible connus et appréciés par tous et mis en pratique dans les meilleures conditions de sécurité et de contrôle.

The problem is too vast for scattered and individual effort, and Dr. Danysz sees the best solution in a correlation of effort—general and social, hygienic, clinical—in an institution where laboratory investigations from the three standpoints go on alongside, and where theory is tested in the the light of practical experience. He makes a strong point of unlimited opportunity for research along the lines of bacteriology and biology, as well as of synthetic and physical chemistry, with a free and immediate interchange of view between the various workers. Organisation of research on a large scale is more economical and Dr. Danysz thinks more productive than a multitude of separately directed efforts. The foundations of Léon Bourgeois at the Hôpital Laennec and at Angicourt, and of Calmette at Lille, admirable as far as they go, are admittedly insufficient to deal with more than the needs of their immediate neighbourhoods.

The Decentralisation of Tuberculosis Effort in Austria.

In contrast to the views of M. Danysz, which we have just quoted, Dr. Hermann von Hayek, at present in charge of a Red Cross Sanatorium near Innsbruck, argues[1] very carefully and cogently the need for decentralisation in tuberculosis effort. To quote his own words:—

What promises to-day most success against tuberculosis is diligent detailed work decentralised into the maximum possible number of areas where effective supervision can be exerted on broad general principles. The aim, in fact, should be to estimate with precision the particular needs of a district and then to administer with intelligence the appropriate remedy.

Dr. v. Hayek begins his thesis with the astonishing statement that among the rural inhabitants of the Tirol where pure air and brilliant sunshine abound the annual incidence of tuberculosis is rising from year to year, while in other districts where extreme industrialisation has taken place the prevalence is falling. Such facts stamp tuberculosis as a housing disease very susceptible to such social-hygienic measures as sick-clubs, health insurance, inspection of dwellings, and popular education. The results at present obtained from sanatorium treatment in Austria are summarised by Dr. v. Hayek as follows:—

A three-months cure may certainly give good individual results, but is not likely to play a leading rôle in the fight against tuberculosis as a popular plague. Sanatoriums are put to their best use in a decentralised organisation which regards their costly beds as a small but essential part of a general scheme of popular welfare and only occupies them in accordance with a medical opinion that the cure will postpone for a long time the threatening working incapacity.

Dr. v. Hayek having graduated in philosophy as well as in medicine expresses his conviction that the average man has too little altruism and too much egoism to subordinate personal advantage to the well-being of the community, and deduces therefrom that no effective antituberculosis campaign can be carried on apart from a measure of compulsion. He states that compulsory notification is already in force in England, Denmark, Sweden, Norway, and most of the States of North America, that a voluntary system exists in France, Italy, Switzerland, and several German States, while in Austria notification is only in force for discharged service men. This he finds to be the right principle, for "compulsory notification is simply futile as a bureaucratic measure if not associated with social and medical assistance." As an example of what to avoid he cites Pennsylvania, where out of a total of tuberculous patients estimated at 60,000 to 70,000 only 6000 were notified. Notification in the absence of other measures is an idle cruelty which can only result in driving tuberculosis underground and the subjects of it into the clutches of the quack. To the compulsory isolation of hopeless cases in the last stages of consumption he sees great difficulty. Even in Germany such a measure has been very incompletely carried out. Of the 1161 deaths from tuberculosis occurring in Munich in the year 1912 only 394 (or 34 per cent.) died in hospital; the percentage for Hamburg was a little higher, about 50. It is rather surprising that he cites England as an encouraging example of the successful solution of this problem, although leaning himself towards the simple isolation homes provided in Norway. Dr. v. Hayek has precise views about the dispensary system as the pivot of the whole question:—

The dispensary which aims at the care and treatment of individual patients without considering in the first place working efficiency and avoidance of infection is a false humanity. The guiding principle must not be individual alms, but support against a disease of general danger to the community. The dispensary should be the central pivot. Those able to undergo a sanatorium cure are at present children of fortune. Disease which lasts for years and decades must be controlled and combated by measures of like duration. Every patient should be referred to some centre which keeps him in mind until dead or cured, and which is in close touch with all the public and private agencies helping the consumptive.

The very same points were strongly brought out by Professor Korányi at the great Budapest Health Congress last October, when expression was given to the urgent need of trained tuberculosis officers and of a colony in the neighbourhood of a populous centre for the purpose of such training. Speaking of the magnitude of the task, Professor Korányi said that he was aiming at three tuberculosis beds per 1000 inhabitants, to be allotted in the proportion of seven hospital beds to one sanatorium bed, and at the provision of at least 22 dispensaries scattered over Hungary. His address afforded occasion for a lively debate.

[1] Wien. klin. Wochenschr., 1917, p. 1457.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS.

THE following subscriptions to the Fund have been received during the week ending Tuesday, Jan. 22nd:—

	£	s.	d.
Dr. R. J. Wilson	2	2	0
Dr. T. Berry	2	2	0
Dr. John Dunlop	1	1	0
Dr. G. H. Dawes	5	0	0
Dr. A. Bowe	1	1	0
Lieut.-Col. E. Le Cronier Lancaster, R.A.M.C....	2	2	0
Dr. Edwin Jackson ...	2	2	0
Dr. W. Adams Clark ...	1	1	0
Dr. F. D. Bennett	2	0	0
Dr. John Thomson ...	2	2	0
Dr. J. A. Small	1	1	0
Dr. W. Collier	5	5	0
Dr. Chas. F. D. Hammond	0	10	6
Lochiel Sheep Farming Co., Ltd. (per Meredith Townsend, Esq.)... ...	50	0	0
Mr. Meredith Townsend	1	1	0
Dr. J. Hepworth Shaw..	2	2	0
Dr. C. O. Hawthorne ...	5	5	0
Per Sir R. J. Godlee ...	7	7	0
Sir Thos. Barlow	5	0	0
Dr. F. de Havilland Hall	2	2	0
Mr. C. S. Ashton	1	1	0
Dr. A. Court	1	1	0
Dr. Vincent Tighe... ...	2	2	0
Mr. A. Jefferis Turner	2	2	0
Mr. E. Edwards	2	0	0
Dr. R. L. Legate	2	0	0
Prof. Robert Saundby ...	1	1	0
Mr. T. R. Cook (Ed. Cook and Co., Ltd.)	1	1	0
Dr. H. A. Latimer... ...	1	1	0
Sir Henry Burdett	5	5	0
Mr. G. M. Arrowsmith...	3	0	0
Dr. T. P. Greenwood ...	0	6	0
"Anon."	2	2	0
Dr. F. M. Blumer	1	1	0
Mr. J. P. Ellerington ...	10	0	0
Mr. W. J. Shepperd ...	0	10	6

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W.1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

PARIS.

(FROM OUR OWN CORESPONDENT.)

Death of Dr. Gabriel Lepage.

THE sudden death of Dr. G. Lepage from cerebral hæmorrhage at the age of 58 years is keenly felt outside his immediate circle. Interne in 1884, accoucheur des hôpitaux in 1894, he assisted Professor Ribemont-Dessaignes at the Hôpital Beaujon and as joint author of the "Student's Textbook of Obstetrics" (now in its eighth edition), becoming full professor in 1898. He was then director in succession of the maternities of La Pitié and the Hôpital Boucicaut, and had a large private practice. But his memory will chiefly live in a larger capacity, for he was, as one of his colleagues writes of him, "champion de la bonne cause"; and whether it was the honour of his profession, or the cause of child welfare, or the affairs of the General Medical Association of France, Dr. Lepage's generous nature spared neither time nor trouble in his advocacy. He worked unceasingly for the betterment of the conditions of maternity in Paris both from the medical and social sides.

The Immediate Suture of Wounds.

The method of immediate suture of wounds daily gains adherents, the only reservation now heard being based on the difficulty of carrying it out during action, when a great number of wounded have to be dealt with at one time. MM. Marquis, Descazals, Luquet, and Morlot have, however, recently shown the Society of Surgery that even in difficult circumstances it is feasible to treat many wounds by this method. In a recent attack one hospital received 1159 wounded men during the day, but by promptly evacuating the slight wounds of soft parts to be sutured later nearer the base it was found possible to treat by immediate suture 298 patients, with a total of 555 wounds, distributed as follow: soft parts, 342; bone, 133; joints, 34; skull, 15, of which 11 laid bare the meninges; abdominal, 19, of which 18 showed visceral lesions; thorax, 12, of which 5 involved the lung and 7 the pleura only. Amongst these 109 were primary and the remainder secondary sutures. Fifty days after the attack 108 (= 36 per cent.) of these 298 patients were healed and sent away to convalesce; 109 were almost healed and on the eve of departure; and 13 had been sent to centres for special treatment. In 15 per cent. suturing was unsuccessful: of these the majority will recover; the remainder must be sutured again. Twenty-one cases died after operation and 9 others before operation could be performed—a total mortality of 10 per cent.

The Prohibition of Secret Remedies.

The debate at the Academy of Medicine has ended in a vote to prohibit absolutely the sale of remedies, whether simple or complex, without an accompanying statement of the exact qualitative and quantitative composition. Means are to be taken to revive the law which directs prosecution for persons contravening this rule, as this has long become a dead letter.

The Recovery-rate among the Wounded.

In a report issued with the imprimatur of the Military Health Commission of the Lower House Dr. Lachaud supplies some new and interesting information from official documents on the recovery rate among wounded men. At the present time, of the 4 million soldiers who have entered the hospitals and ambulances since the commencement of the war 3½ millions have recovered and returned to the front. The remainder have received appropriate treatment, re-education, and compensation to fit them for national work. Evidence of the far-reaching results achieved by the Service de Santé Militaire is contained in the two statements that cases of typhoid in the army have been reduced by inoculation to an altogether trifling number and that malaria, at first a formidable enemy, has now yielded in large degree to the new systematic therapeutic methods.

Jan. 21st.

THE SALARIES OF POOR-LAW MEDICAL OFFICERS.—At the last meeting of the Okehampton (Devon) board of guardians it was resolved to increase the salaries of the district medical officers by 33⅓ per cent.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Liverpool.—Dr. E. W. Hope's annual report for the year 1916, though much reduced in size as compared with pre-war issues, contains some very interesting material. The population of the city at the middle of the year under report was estimated to be 777,247, an increase over the previous year of 4652. The birth-rate was 26·6, comparing favourably with the average of the great towns, which is 23·0, as well as of England and Wales taken as a whole, which gives a rate of 21·6 per 1000. The general death-rate of 17·9 was one of the lowest on record, while the infant mortality rate of 117 per 1000 births is the lowest ever recorded. The zymotic death-rate was 1·7 and the phthisis death-rate 1·6 per 1000. Liverpool is, of course, closely associated with all parts of the world by reason of the large volume of shipping continually arriving in the port, and this renders the city peculiarly liable to the importation of exotic and other diseases. In this connexion it is interesting to learn that a localised outbreak of plague occurred in Liverpool during the latter part of September. There were 7 cases and 5 deaths, 3 households being invaded. The coroner held an inquest on a female member of a family residing in B—— Street, who developed an illness resembling ptomaine poisoning on Sept. 5th and died on Sept. 8th, In the light of subsequent events there is little doubt that she died from plague. On Sept. 17th her brother, aged 9 years, fell ill with abdominal pains and vomiting. The true nature of the disease was not recognised by the medical attendant, who diagnosed pneumonia. The boy died on Sept. 19th. Another medical man, called in on the following day to see the deceased's father, aged 53 years, and his brother, aged 12 years, who had now developed similar symptoms, had the patients removed to hospital, where Dr. W. Hanna, the assistant medical officer of health, diagnosed them as plague. The father and son, along with the mother, were subsequently removed for isolation. The father died in hospital, but the son recovered. The mother developed a mild attack of plague whilst under observation in hospital. Post-mortem examination showed that the cases were due to plague, and this was subsequently confirmed by bacteriological investigation. On Sept. 25th, a labourer, aged 56, who resided in E—— Street and worked in a grain warehouse at the docks, fell ill and was removed to the isolation hospital. He died on Sept. 28th, and the diagnosis of plague was bacteriologically confirmed. The final case occurred in the person of a rag-sorter working at a rag-sorting business in the city. The patient lived in T—— Street and became ill with pains in the head and a swelling in the axilla on Oct. 2nd. She died on Oct. 4th without having received any medical attention. A post-mortem examination showed that death was due to plague, and this was confirmed by bacteriological evidence. Inquiry showed that all the rags sorted at the rag-store at which this patient worked were of local origin, and that no foreign rags of any kind had been received on the premises. The patient living in B—— Street was a carter engaged in carting goods to and from the docks, and goods were frequently left overnight at the premises where he resided. The patient living in E—— Street worked at a grain warehouse at the docks, where several dead rats had recently been discovered, some of which were found to be infected with plague. Dr. Hope states that the outbreak confirms the experience of previous years that localised outbreaks are all due to simple and specific importations of plague which, once detected and promptly dealt with, can give little cause for anxiety. A prompt examination of all doubtful or suspected cases and a continuous and energetic campaign of rat catching and rat destruction, both in the city, ships, and docks, is, however, extremely important. No fewer than 14,732 of measles and German measles were reported during the year under the Public Health (Measles and German Measles) Regulations, 1915, of which over 9000 occurred in the spring and early summer months—March to June. The number of cases removed to hospital was 1096, a very much larger number than had ever received hospital treatment in any previous year. The deaths numbered 264, as against an average of 438 in the preceding ten years. The health

committee appointed four nurses to deal with cases in the poorer homes of the city. In consequence of the visits of these nurses many cases were removed for hospital treatment that otherwise would have been left at home without adequate care and attention. Nine cases of polio-myelitis came under the notice of the Health Department during the year, four of which had a fatal termination. There were 37 cases of cerebro-spinal fever, with 23 deaths. Careful investigation was made in every case, but the source of infection could not be traced. No extension of the disease took place in the houses where cases were reported. Fifteen cases of anthrax were notified during the year, and in three cases death occurred. A large portion of those attacked were warehousemen and porters. Cases were also reported amongst those handling, or in some way associated with, imported hides, others were hair curlers, ship painters, or labourers.

City of Cardiff.—Dr. E. Walford's annual report for the year 1916 contains an interesting account of an outbreak of small-pox which occurred in the city during the year under report. The first cases occurred in the neighbourhood of the docks and seamen's lodging-houses. Between Feb. 1st and June 6th 51 cases of the disease came to the knowledge of the health department. Three out of the 51 cases proved fatal, giving a rate of mortality rather below the average. It is noteworthy that the 3 deaths occurred amongst the 6 unvaccinated persons who were attacked. It has generally been possible in Cardiff to isolate in hospital without delay any cases of small-pox imported by shipping and the disease has seldom spread from this source. In the outbreak under consideration, though the first cases were discovered in a street much frequented by seamen, no trace of any imported infection could be found. It is probable, however, that the disease may have been introduced into the port by some undiscovered convalescent seaman from abroad. The infection, which was at first confined to the original centre in the streets near the docks, soon spread to other parts of the town, although with one exception it was entirely restricted to houses situated on the east side of the river Taff. The first case was a woman, aged 22 years, who was found on Feb. 2nd suffering from small-pox with a well-developed rash, confluent on the face. The onset of her illness dated from Jan. 22nd. It was at first suspected that she had been infected during a voyage from Egypt, but it was found on inquiry that she arrived in Cardiff on Jan. 7th, and that no case of small-pox had occurred on board the steamer which conveyed her to England. In these circumstances the source of infection was looked for amongst her associates and neighbours in Cardiff, and investigations soon led to the discovery of a centre of infection in two houses in P—— Street. In these houses an examination of the inmates revealed the existence of three persons who had recently suffered from small-pox in a comparatively slight form and who had received no medical attention. From this centre and from the first-mentioned case the infection spread to various parts of the town. The outbreak finally died out in June. All the cases, with the exception of those which were not discovered until after recovery, were removed to the Cardiff Small-pox Hospital, and a very large number of persons who had been in contact with those infected were vaccinated or revaccinated.

City and County of Newcastle-on-Tyne.—In his annual report for the year 1916 Dr. H. Kerr comments on the housing problem in the city. He states that so great is the scarcity of houses that overcrowding may now be said to have become habitual. As a result of a census of 991 tenement dwellings, mostly of one- or two-roomed holdings, which was carried out by the inspector of nuisances in different parts of the city, the conclusion is arrived at that, in order to relieve the congestion in tenements alone so that the occupants would average not more than two persons per room, about 1150 new rooms are required, or, at two rooms per holding, nearly 600 dwellings. As the tenement dwellers represent under 15 per cent. of the total population and as overcrowding undoubtedly exists in the flats and self-contained houses, it is evident that a very large number of new houses are required. There is not an empty house in most of the working-class wards. Substantial sums are offered as bonuses for possession of even a small flat, occasionally as much as £10. As the shortage of working-class houses in many of our large industrial centres is quite as great as in Newcastle-on-Tyne, the foregoing statements afford some indication of the magnitude of the task which will require to be faced after the war if the workers of this country are to be provided with decent houses in which they can lead healthy lives and rear strong healthy children. As indicating the influence of defective housing accommodation upon health, some of Dr. Kerr's observations on the subject are interesting. He expresses the view that the now established habit of congestion is bound to leave its mark on the health and physique of the people, as is readily demonstrable in the high mortality rates from all causes, from tuberculosis, and among infants in the more densely crowded areas and those having the most insanitary houses. Thus the general death-rate in St. John's Ward was 21·9 per 1000 inhabitants, while in Dene Ward it was 9·9. In St. Nicholas's 3·28 persons out of every 1000 inhabitants died of consumption of the lungs, but in St. Thomas's the rate was only 0·55. 28 per cent. of the population of the city live in one- and two-roomed dwellings, but among these occurred 35 per cent. of the deaths from consumption. The infantile mortality rate in St. John's Ward was 165 deaths per 1000 births, whereas in Jesmond it was only 50. (In this connexion it should be stated, however, that St. John's Ward has nearly the highest birth-rate in the city.) The deaths in 1916 among infants under the observation of the health visitors were at the rate of 196 per 1000 births in single-room dwellings, 147 in two-room, and 113 in three-room dwellings.

URBAN VITAL STATISTICS.

(Week ended Jan. 19th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 18·7, against rates which had steadily increased from 11·9 to 19·6 per 1000 in the seven preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 20·6, or 1·6 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 8·3 in Gillingham, 9·9 in Gloucester, and 11·1 in Swansea to 28·4 in Middlesbrough, 29·3 in Dudley, and 30·1 in Merthyr Tydfil. The principal epidemic diseases caused 437 deaths, which corresponded to an annual rate of 1·3 per 1000, and included 163 from whooping-cough, 142 from measles, 70 from diphtheria, 48 from infantile diarrhœa, 10 from scarlet fever, and 4 from enteric fever. Whooping-cough caused a death-rate of 1·5 in Liverpool and in Oldham, 1·7 in Salford, 1·9 in Birkenhead, 2·5 in Wigan, and 2·7 in Middlesbrough; and measles of 1·7 in Blackburn, 1·9 in Leicester, 2·1 in Barnsley, 3·9 in Bury, 4·8 in Halifax, and 7·0 in Merthyr Tydfil. The 1140 cases of scarlet fever and 1625 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 58 and 25 below the respective numbers remaining at the end of the preceding week. Of the total deaths in the 96 towns 220 resulted from violence. The causes of 60 deaths were uncertified, of which 14 were registered in Birmingham, 6 in Liverpool, and 5 each in Manchester and Preston.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 17·5, against 16·0 per 1000 in each of the two preceding weeks. The 366 deaths in Glasgow corresponded to an annual rate of 17·1 per 1000, and included 12 from whooping-cough, 4 from diphtheria, 3 each from measles and infantile diarrhœa, and 1 from enteric fever. The 114 deaths in Edinburgh were equal to an annual rate of 17·8 per 1000, and included 2 from diphtheria and 1 from scarlet fever.

Irish Towns.—The 164 deaths in Dublin corresponded to an annual rate of 21·4, or 0·7 per 1000 below that recorded in the previous week, and included 9 from measles, 4 from infantile diarrhœa, 2 from whooping-cough, and 1 each from enteric fever and diphtheria. The 154 deaths in Belfast were equal to a rate of 20·4 per 1000, and included 8 from measles, 7 from whooping-cough, 3 each from scarlet fever and infantile diarrhœa, and 2 from diphtheria.

VITAL STATISTICS OF LONDON DURING DECEMBER, 1917.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 5·3 per 1000 of the population, estimated at 4,237,387 persons; in the three preceding months the rates had been 4·2, 5·3, and 6·3 per 1000. The lowest rates in December were recorded in Kensington, Hammersmith, the City of Westminster, St. Marylebone, Stoke Newington, Holborn, and the City of London; and the highest rates in Bethnal Green, Stepney, Poplar, Southwark, Bermondsey, and Greenwich. The prevalence of scarlet fever was considerably less than in the preceding month; this disease was proportionally most prevalent in Fulham, St. Pancras, Bethnal Green, Poplar, Wandsworth, and Greenwich. The Metropolitan Asylums Hospitals contained 1246 scarlet fever patients at the end of the month, against 807, 1180, and 1335 at the end of the three preceding months; the weekly admissions averaged 138, against 138, 177, and 191 in the three preceding months. Diphtheria showed a small decline on the preceding month, but was higher than in any other month of the year; the greatest proportional prevalence of this disease was recorded in Shoreditch, Bethnal Green, Stepney, Southwark, Bermondsey, Greenwich, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals,

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING DECEMBER, 1917.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1916.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON	4,237,387	—	568	849	—	41	—	16	229	19	—	1713	5·3	—	154	8	78	108	10	76	434	1·3	5302	16·3
West Districts:																								
Paddington	130,668	—	14	22	—	2	—	1	1	—	—	40	4·0	—	2	—	1	2	—	2	7	0·7	143	14·3
Kensington	152,144	—	15	11	—	1	—	—	8	—	—	35	3·0	—	—	—	1	—	—	4	5	0·4	219	18·8
Hammersmith	117,965	—	9	6	—	—	—	—	5	—	—	20	2·2	—	—	—	1	1	—	2	4	0·4	130	14·4
Fulham	149,428	—	29	19	—	—	—	—	5	1	—	54	4·7	—	—	1	2	3	—	2	8	0·7	144	12·6
Chelsea	57,298	—	9	5	—	—	—	—	4	—	—	18	4·1	—	—	—	—	—	—	1	1	0·2	76	17·3
City of Westminster	132,853	—	18	6	—	2	—	—	2	—	—	28	2·7	—	1	—	—	1	—	3	5	0·5	130	12·8
North Districts:																								
St. Marylebone	98,573	—	4	12	—	—	—	—	3	1	—	20	2·6	—	—	—	2	1	—	2	5	0·7	119	15·7
Hampstead	81,470	—	5	19	—	5	—	—	4	—	—	33	5·3	—	1	—	3	1	2	—	7	1·1	71	11·4
St. Pancras	196,812	—	32	32	—	3	—	1	12	2	—	82	5·4	—	4	1	1	6	3	6	21	1·4	243	16·1
Islington	309,359	—	43	49	—	2	—	—	14	1	—	109	4·6	—	34	1	6	4	—	1	46	1·9	434	18·3
Stoke Newington	49,776	—	4	4	—	1	—	—	3	—	—	12	3·1	—	1	—	—	—	—	—	1	0·3	56	14·7
Hackney	209,636	—	29	36	—	2	—	1	17	1	—	86	5·3	—	1	1	2	3	1	3	11	0·7	218	13·6
Central Districts:																								
Holborn	38,161	—	4	3	—	—	—	—	—	—	—	7	2·4	—	5	—	—	—	—	—	5	1·7	66	22·5
Finsbury	74,230	—	12	12	—	—	—	—	4	—	—	28	4·9	—	27	—	1	2	—	2	32	5·6	165	29·0
City of London	20,113	—	3	2	—	—	—	—	—	—	—	5	3·2	—	1	—	1	—	—	—	2	1·3	18	11·7
East Districts:																								
Shoreditch	99,932	—	9	30	—	—	—	1	6	—	—	46	6·0	—	38	—	6	5	—	10	59	7·7	254	33·1
Bethnal Green	115,552	—	21	44	—	—	—	—	10	—	—	75	8·5	—	15	—	2	4	1	4	26	2·9	165	18·6
Stepney	258,396	—	28	122	—	6	—	3	21	—	—	180	9·1	—	9	1	11	10	1	7	39	2·0	355	17·9
Poplar	155,095	—	28	37	—	2	—	3	12	—	—	82	6·9	—	5	1	1	8	—	3	18	1·5	189	15·9
South Districts:																								
Southwark	177,166	—	27	45	—	—	—	1	18	—	—	91	6·7	—	5	—	4	6	—	4	19	1·4	247	18·2
Bermondsey	113,661	—	23	32	—	—	—	—	10	—	—	65	7·5	—	1	1	2	20	—	—	24	2·8	203	23·3
Lambeth	283,729	—	31	47	—	3	—	3	12	1	—	97	4·5	—	1	—	5	6	1	4	17	0·8	338	15·5
Battersea	159,402	—	22	16	—	2	—	1	6	—	—	47	3·8	—	—	—	1	8	—	1	10	0·8	193	15·8
Wandsworth	310,858	—	51	55	—	6	—	—	14	2	—	128	5·4	—	1	—	5	4	1	2	13	0·5	303	12·7
Camberwell	249,749	—	26	35	—	—	—	—	14	—	—	75	3·9	—	1	1	4	6	—	6	18	0·9	313	16·3
Deptford	107,696	—	16	20	—	3	—	—	7	—	—	46	5·6	—	—	—	1	7	—	4	12	1·5	131	15·9
Greenwich	94,452	—	19	49	—	—	—	—	3	—	—	71	9·8	—	1	—	6	—	—	—	7	1·0	118	16·3
Lewisham	162,901	—	21	39	—	—	—	1	8	—	—	69	5·5	—	—	—	2	—	—	2	4	0·3	143	11·4
Woolwich	130,313	—	16	40	—	1	—	—	6	1	—	64	6·4	—	—	—	7	—	—	1	8	0·8	118	11·8
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

which had been 1111, 1398, and 1656 at the end of the three preceding months, were again 1656 at the end of December; the weekly admissions averaged 203, against 168, 206, and 239 in the three preceding months. The prevalence of enteric fever was slightly more than in the preceding month; of the 41 cases notified in December, 6 belonged to Stepney, 6 to Wandsworth, 5 to Hampstead, 3 to St. Pancras, 3 to Lambeth, and 3 to Deptford. There were 32 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 46, 38, and 36 at the end of the three preceding months; the weekly admissions averaged 5, against 6, 3, and 5 in the three preceding months. Erysipelas was proportionally most prevalent in Hackney, Bethnal Green, Stepney, Poplar, Southwark, and Bermondsey. The 16 cases of puerperal fever notified during the month included 3 each in Stepney, Poplar, and Lambeth. Of the 10 cases of cerebro-spinal meningitis, 2 belonged to St. Pancras and 2 to Wandsworth. No case of poliomyelitis was notified during the month of December.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending Dec. 29th the deaths of 5302 London residents were registered, equal to an annual rate of 16·3 per 1000; in the three preceding months the rates had been 11·0, 12·5, and 12·5 per 1000. The death-rates in December ranged from 11·4 in Hampstead and in Lewisham, 11·7 in the City of London, 11·8 in Woolwich, 12·6 in Fulham, 12·7 in Wandsworth, and 12·8 in the City of Westminster, to 18·6 in Bethnal Green, 18·8 in Kensington, 22·5 in Holborn, 23·3 in Bermondsey, 29·0 in Finsbury, and 33·1 in Shoreditch. The 5302 deaths from all causes included 434 which were referred to the principal infectious diseases; of these, 154 resulted from measles, 8 from scarlet fever, 78 from diphtheria, 108 from whooping-cough, 10 from enteric fever, and 76 from diarrhœa and enteritis among children under 2 years of age. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Kensington, Hammersmith, Chelsea, the City of Westminster, Stoke Newington, Wandsworth, and Lewisham; and the highest death-rates in Islington, Finsbury, Shoreditch, Bethnal Green, Stepney, and Bermondsey. The 154 deaths from measles were 29 above the corrected average number in the corresponding period of the five preceding years, and included 38 in Shoreditch, 34 in Islington, 27 in Finsbury, and 15 in Bethnal Green. The 8 deaths from scarlet fever were 10 below the corrected average number. The 78 fatal cases of diphtheria exceeded the corrected average number by 50 per cent.; the greatest proportional mortality from this disease occurred in Hampstead, Shoreditch, Stepney, Greenwich, and Woolwich. Whooping-cough showed an even more marked excess over the average, the deaths from this disease numbering 108, the corrected average being 40; this disease was proportionally most fatal in Shoreditch, Stepney, Poplar, Bermondsey, Battersea, and Deptford. The 10 deaths from enteric fever were 3 above the corrected average, and included 3 in St. Pancras, 2 in Hampstead, and 1 each in Hackney, Bethnal Green, Stepney, Lambeth, and Wandsworth. The 76 deaths from diarrhœa and enteritis were 18 below the corrected average; the greatest proportional mortality from this cause was recorded in Kensington, St. Pancras, Shoreditch, Bethnal Green, Stepney, and Deptford. In conclusion, it may be stated that the aggregate mortality in London in December from these principal infectious diseases was 29 per cent. above the average.

PRESCRIBING IN SCOTLAND UNDER THE NATIONAL HEALTH INSURANCE ACT.—In the report on the working of the National Health Insurance Act for the three years 1914–17, it is stated that, with a view to ascertaining the causes of the varying experiences of insurance areas in regard to drug expenditure, Mr. I. F. Tocher, D.Sc., F.I.C., public analyst and lecturer on statistics, Aberdeen University, made, at the instigation of the Commission, inquiries in certain typical areas on the prescribing and dispensing of drugs under the Act, and reported to the Commission. Careful investigation was made into a large number of prescriptions selected from burgh and county areas, and it was found that with respect to the character and quality of the drugs ordered to the insured the practitioners had as a rule selected the most modern drugs and those of best repute, ordering to their insured patients the same drugs that they used in their private practices. An analysis of 54,834 prescriptions showed that mixtures formed 56·17 per cent. of the total; powders, 6·99 per cent.; appliances, 5·90 per cent.; liniments, 4·63 per cent.; ointments, 4·33 per cent.; pills, 3·04 per cent.; and all other forms less than 3 per cent. Gargles, capsules, cachets, suppositories, plasters and blisters, were severally under 1 per cent. On analysis of 520,630, representing approximately 650,700 prescriptions, for a period of six months, in 16 Scottish burghs, it was found that the price ranged from ½*d.* to 1*s.* in 80·5 per cent., and from 1*s.* 0½*d.* to 2*s.* in 16·2 per cent. It was found from the figures for the year 1914 that the total of the chemists' bills in Scotland had risen from £93,122 12*s.* 1*d.* in 1913 to £102,516 3*s.* 6*d.* in 1914. In two burghs especially the amount of the drug fund was exceeded. The high rate of expenditure was checked about the middle of 1915, the cause doubtless being the systematic checking of prescriptions by the central checking bureau, with the increasing notice given to irregularities and to unusual or excessive—in point of cost or quantity—items in prescriptions.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Previously reported Missing, now reported Killed.

Capt. A. K. Sinha, I.M.S., qualified M.B. Calcutta in 1912, and afterwards took the M.R.C.S., L.R.C.P. Lond., in 1913. He was a student at University College Hospital, London.

Died.

Col. J. B. Mann, late A.D.M.S., East Lancs. Division, T.F., was educated at Owens College, Manchester, and for many years practised in St. John-street, Manchester. He took keen interest in the Volunteer and Territorial Forces. At the time of his death he was one of the military members of the East Lancashire Territorial Force Association.

Drowned.

Surg.-Prob. L. P. St. J. Story, R.N.V.R.

Previously reported Missing, now reported not Missing.

Capt. D. R. Alexander, R.A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. G. A. D. McArthur, R.A.M.C., attached K.R.R. Corps.
Capt. F. M. Walker, M.C., R.A.M.C.
Capt. A. G. Bryce, R.A.M.C., attached Suffolk Regiment.
Capt. H. B. Goulding, R.A.M.C., attached Glouc. Regiment.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Temp. Capt. J. W. Greany, D.S.O., Wiltshire Regiment, previously reported wounded and missing in April, 1916, now officially presumed killed in action, elder son of Surg.-Gen. J. P. Greany, of Ealing, London.
Col. J. B. Mann (see above), youngest son of the late R. M. Mann, M.R.C.S., L.S.A., of Manchester.

THE HONOURS LIST.

The following awards to medical officers are announced. The acts of gallantry for which the awards were made are not yet published.

Bar to the Distinguished Service Order.

Temp. Surg. W. J. McCracken, D.S.O., M.C., R.N.

Distinguished Service Order.

Royal Army Medical Corps.—Temp. Capt. A. S. K. Anderson, M.C.; Temp. Capt. J. T. Bowman; Temp. Capt. H. B. Graham; Capt. (acting Lt.-Col.) R. T. C. Robertson (Spec. Res.).
Australian Army Medical Corps.—Capt. G. V. Davies.
Canadian Army Medical Corps.—Temp. Capt. H. G. Young.

Second Bar to the Military Cross.

Temp. Capt. G. D'R. Carr, M.C., R.A.M.C.

Bar to the Military Cross.

Temp. Surg. J. N. McB. Ross, M.C., R.N., attd. R.M.; Capt. R. B. Stewart, M.C., R.A.M.C. (Spec. Res.); Temp. Capt. F. R. Thornton, M.C., R.A.M.C.; Capt. D. MacD. Steele, M.C., Austr. A.M.C.

The Military Cross.

Royal Army Medical Corps.—Temp. Capt. J. F. Broughton; Capt A. Cameron; Temp. Lt. (temp. Capt.) W. K. Campbell, D.S.O.; Temp. Capt. C. L. Chalk; Capt. J. W. Craven; Temp. Capt. H. H. Dummere; Temp. Capt. J. T. Lloyd; Temp. Capt. J. MacGregor; Temp. Capt. J. M. MacKay; Temp. Capt. D. Matthew; Capt. A. J. A. McCabe-Dallas; Capt. P. McRitchie; Capt. E. Percival, D.S.O.; Temp. Capt. M. A. Power; Temp. Capt. R. T. Raine; Capt. C. Rogers; Capt. J. G. Ronaldson, Spec. Res.; Temp. Capt. R. H. Tribe.
Australian Army Medical Corps.—Capt. A. J. Collins; Capt. E. M. Gordon-Glassford; Capt. H. E. Kirkland; Capt. G. A. Lawrance; Capt. J. S. Mackay; Capt M. H. Maller; Capt. W. D. Quilty; Capt. C. F. Robinson.
Canadian Army Medical Corps.—Capt. W. F. Abbott; Capt. H. C. Davis; Capt. J. F. S. Marshall; Capt. T. W. Moore; Capt. H. F. Preston; Capt. W. H. Scott; Capt. E. C. Whitehouse.
Indian Medical Service.—Temp. Lieut. K. S. Master.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned for gallant conduct and distinguished services in a despatch received from General Sir E. Allenby, G.C.M.G., K.C.B., Commanding-in-Chief, Egyptian Expeditionary Force. All are members of the R.A.M.C., except where otherwise stated :—

Capt. F. Alcock; Temp. Capt. M. Bates; Maj. (temp. Lt.-Col.) J. W. Bird, D.S.O.; Maj. (temp. Lt.-Col.) J. M. G. Bremner; Capt. E. C. Crichton; Lt.-Col. (temp. Col.) E. B. Dowsett; Capt. J. F. G. Fitzhardinge, Austr. A.M.C.; Lt.-Col. A. C. Goodwin; Major F. Gracie; Temp. Capt. C. I. Hannigan; Maj. C. B. Hercus, N.Z.M.C.; Capt. (acting Lt.-Col.) T. B. Layton; Maj. (acting Lt.-Col.) A. Leggat; Temp. Capt. W. Leggett; Maj. P. S. Lelean, C.B.; Maj. (acting Lt.-Col.) J. W. Leitch; Col. (temp. Surg.-Gen.) J. Maher, C.B., A.M.S.; Capt. E. P. Minett; Capt. A. R. Muir; Maj. (temp. Lt.-Col.) H. Richardson; Capt. R. P. Starkie, Spec. Res.; Capt. I. D. Stubbs; Capt. H. Sutton, Austr. A.M.C.; Lt.-Col. H. W. Thomson; Lt.-Col. (temp. Col.) A. H. Tubby, C.M.G., A.M.S.; Temp. Capt. R. M. Wright.

OBITUARY OF THE WAR.

HERBERT MATHER SPOOR, M.B., CH.B. EDIN.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain H. M. Spoor, who was accidentally killed on active service on Dec. 13th last, was eldest son of the late Rev. Ralph Spoor, of Richmond. He was educated at Woodhouse-grove, Leeds, and Kingswood, Bath, and after a period spent in business and journalism he commenced a medical course at Edinburgh University. After taking his degree in 1908 he entered into partnership in general practice first at Stoke Newington and later in the Hundred-of-Hoo, Rochester, where he was keenly interested in the social life of the villages. In April, 1915, he received a commission in the Royal Army Medical Corps, going to France at the end of the following year, and he was awarded the Military Cross for gallant services which we described last week. He met his end not long after in a burning dug-out, from which he had already rescued a comrade.

Captain Spoor, besides obtaining many distinctions during his medical studies, was an office-bearer in many of the students' societies—dramatic, athletic, and political. A colleague writes of his all-round efficiency and of his prospect of a distinguished career cut short by untimely death. He leaves a widow and two sons.

ROBERT SCOTT SMITH, M.B., C.M. TOR.,

CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

Captain R. S. Smith, whose death occurred in a London hospital on Dec. 22nd last, was born in February, 1885, at Bright, Ont., graduated in medicine at the University of Toronto in 1911, and settled in practice at Guelph, Ont. Joining the C.A.M.C. in the spring of 1916, he came to England in the autumn of the same year, and was attached to the Canadian Convalescent Hospital at Uxbridge. After eight months of service there his health failed, symptoms of progressive anæmia setting in, on account of which he had been in hospital since last August. Captain Smith was unmarried.

MEDICAL ASSESSORS FOR SCOTLAND: EDINBURGH CENTRE.

The Secretary for Scotland has appointed the following to be Medical Assessors to carry out the re-examination and grading of men of military age who, having been examined by a National Service Medical Board, have been granted leave by the appropriate Appeal Tribunal to be re-examined by the Medical Assessors: Dr. F. D. Boyd, C.M.G., Dr. Byrom Bramwell, Dr. J. J. Graham Brown, Professor G. Lovell Gulland, C.M.G., Professor William Russell, Mr. J. Montagu Cotterill, Dr. J. W. Beeman Hodson, Dr. Alexander Miles, and Professor H. E. Thomson, C.M.G.

CANADIAN RED CROSS WORK IN FRANCE.

BY E. MONTIZAMBERT.

AT a time when the Red Cross work of every country is being carried on with extraordinary generosity and competence it may seem invidious to point out what has been done by any one branch of the vast international organisation.

Great Extent and Development of the Work.

But the work accomplished by the Canadian Red Cross is noteworthy for the contrast between the comparatively small population scattered over an immense area preparing their supplies at a distance of 4000 miles from the scene of operation without any of the incentives to fresh effort found at closer range, and the almost incredible extent to which the work has been steadily developed, in some instances going beyond what might have been expected had Canadian resources been ten times greater than they are. And their effort is not by any means confined to helping their own wounded. The Canadian Red Cross has done its work so quietly that few people realise that besides being entirely self-supporting it has contributed nearly a million and a half sterling in money gifts to the funds of the British Red Cross.

In France, where no paraphernalia of philanthropy have advertised to the general public the constant stream of solidly packed cases that has poured into French hospitals during the last three years, it was a genuine surprise to the majority of people who saw the huge maps exhibited at the present "Exposition des Dons Américains," organised by the Comité France-Amérique, showing that the Canadian Red Cross headed the list of gifts in kind sent from all the countries, not excepting the United States, while the money grants of her scattered and comparatively meagre population ranked fourth in a list of 23. This achievement is not due to the efforts of a small class of wealthy people, but rather to the fact that the idea of helping the wounded to support their suffering has taken such a firm hold of the imagination of so many people of all classes that the efforts made in the first year of the war have not only never been allowed to relax, but have steadily increased.

From the days when Lieutenant-Colonel H. W. Blaylock, Assistant Canadian Red Cross Commissioner, arrived in France, and established his modest headquarters with one motor lorry and two orderlies at Boulogne, he has persistently expanded the work till there is now not an advanced dressing station, casualty clearing station, field ambulance, or base hospital of the Canadian corps, not an Imperial hospital where Canadians are received, nor a French hospital from Boulogne to Marseilles where the friendly Canadian label is not known and joyfully hailed. Cases of Red Cross supplies are sent as far afield as Serbia, Egypt, and Mesopotamia, besides the immense amount of work done for benefit of the Canadian wounded in England by Colonel C. A. Hodgetts, the Overseas Commissioner.

Organisation.

The work carried on in France by Colonel Blaylock falls into two divisions, the organisation for supplying comforts to the Canadian wounded and that for supplying extra comforts and necessaries to over 4000 French hospitals. The work for the Canadian wounded is carried on from the headquarters at Boulogne. There are six large storehouses of supplies scattered over the town, this multiplication of collecting and distributing centres being due partly to the difficulty of obtaining suitable quarters, and partly to intention to avoid complete loss of stock in case of a raid. These stores at first sight look as if a wholesale merchant had been undecided as to whether he intended to set up business as a grocer, an ironmonger, or a haberdasher. But if there was confusion in his mind, there was certainly none in his stock. The immense quantities of condensed milk, cocoa, jams, stoves, kitchen utensils, sheets, blankets, &c., are arranged with military precision. The quantities of supplies kept in these stores are five times as much as those handled by the London office, and vary from $75,000 to $200,000 worth of supplies. The Canadian Red Cross is not supposed to duplicate or clash with the supplies issued by the Army Ordnance Department, but occasionally, when the latter are held up by red tape, the Red Cross, with its greater elasticity of system, is able to issue the needed supplies with the least delay. The absence of red tape, indeed, has become one of the most marked features of the Canadian Red Cross organisation, and as a result of the fact that they have never abused the freedom, they enjoy an extraordinary amount of liberty from the authorities. The stores are sent over to France from the London office, but in the case of sudden demand a messenger may be sent over to England to bring back immediately any urgently needed supplies.

In theory the Canadian Red Cross cases are only sent to Canadian hospitals, the Imperial hospitals being supposed to care for their Canadian wounded as the Canadians do for the Imperial soldiers in their charge. In practice, however, when there is a high percentage of Canadians in any Imperial hospital the O.C. or the matron can indent for Canadian supplies and receive them at once. The work of the British and Canadian Red Cross Societies is carried on quite separately, but with the utmost solidarity. Mutual assistance is at once rendered in any emergency in such matters as the lending of stores, motor transport, personnel, or anything the one may need in which the other may assist. As far as administration is concerned they are entirely distinct. The quantity of stores at the Boulogne headquarters is easily explained by the fact that there are over 25 Canadian hospitals in France, and from 50 to 60 Imperial hospitals with Canadian wounded. An extraordinary variety of articles is stocked, because Colonel Blaylock believes that any real need should be supplied as soon as possible. His latest plan for facilitating the work of the C.A.M.C. is the installation of portable electric-light plants in advanced dressing stations, where a good light is badly needed by the surgeons, whose work has often to be carried on in cellars and dugouts. These electric-light plants are run by gasoline and are small enough to be carried in the trenches by two men.

Distribution Facilitated by System of Decentralisation.

Colonel Blaylock has organised the swift distribution of his supplies by a system of decentralisation planned to attain the maximum of speed. Advanced stores have been established in each Canadian general hospital, with an orderly in charge to give out the supplies on receipt of an indent from the O.C. or the matron. This system has lately been extended to the advanced dressing stations and field ambulances. Before the battle of Vimy Ridge an advance store was opened near the headquarters of the D.D.M.S., which proved so useful that it was permanently organised with its own means of transport and a stock of necessary supplies, in charge of a C.R.C. officer attached to the D.D.M.S. The Society's officers constantly visit all advance stores either in base hospitals or advanced dressing stations in order to keep in touch with each unit and note requirements. The C.A.M.C. and the Canadian Red Cross are on terms of most cordial coöperation. The M.O. of each battalion and battery when he goes up to the front takes with him a Red Cross parcel containing chocolate, soups, cocoa, café au lait, and the solidified alcohol for heating them; Greeley hypodermics, candles, matches, cigarettes, &c. The Canadian Red Cross also issues to the relay posts, advanced dressing stations, and main dressing stations, many other things such as Primus stoves, socks, dressings, scissors, biscuits, &c. Great pride is taken in the fact that when any emergency occurs supplies can be rushed up to the front within two and a half hours from the reception of the request. Fast motor lorries are always ready to set off at a 40-mile-an-hour pace at any hour of the day or night. A good instance of the value of this speed was given when mustard gas was first used by the Germans. The D.D.M.S. decided to adopt a treatment needing a supply of baths and pyjamas. To get these by application to the Army Ordnance Stores would have taken time. The C.R.C. was appealed to and in a few hours both baths and pyjamas were delivered in the forward area. A day or two later mustard-gas shells were poured on our troops, and Colonel Blaylock was able to report: "Because the remedy was at hand our men escaped with little suffering and practically no disfigurement."

A motor garage, repair shop, and quarters for the sergeants, drivers, mechanics, and orderlies have just been built for the convenience of the staff.

A careful system of bookkeeping makes it perfectly easy to trace a pair of socks on its travels from a north-west

Canadian farm to its recipient in the trenches. Every month a statement of supplies received is issued and a record of their destination is sent to the London office and the headquarters in Canada.

Other Forms of Assistance.

There are other forms of Canadian Red Cross activity besides the actual bestowal of food or clothes among the wounded. Recreation huts for the use of convalescent patients in the Canadian hospitals have recently been built and equipped with pianos, billiard tables, easy chairs, and writing tables. These places have proved a great success, for the men, who formerly had nowhere to go outside their wards in bad weather, now have a cheerful room where they find distraction and change of scene. The huts are in charge of two Canadian V.A.D.'s, who organise whist drives, concerts, entertainments, and generally keep the men amused. Hut wards for the treatment of chest cases have also been put up by the C.R.C. at No. 1 and No. 3 Canadian General Hospitals. These wards are justifying their existence by the success of their treatment.

Another branch of Canadian Red Cross work is the part taken in the motor convoy organised by the British Red Cross and the Order of St. John. The majority of the motor ambulances forming this convoy are the gift of the Canadian Red Cross or of private individuals or Canadian organisations, and five of the girl chauffeurs who replaced the men drivers last March are Canadians. The convoy, whose entire running expenses are met by the British Red Cross, provides for the transport of the wounded to and from all the base hospitals, who have no motor transport of their own.

Besides the work done for the fighting soldier, the Canadian Red Cross also looks after all the isolated Canadian units scattered over France and engaged in railway construction, forestry, or tunnelling. Wherever their numbers have necessitated the establishment of small hospitals, equipment has been helped and the supply of comforts provided by the Canadian Red Cross.

Canadian Sympathy and Help for the French.

The effort made by Canadians to help their own soldiers is not in the least surprising, but side by side with this effort a continuous steady work has been carried on since 1914 to help the French Allies, whose valour and misfortune have so touched the heart and fired the imagination of every man, woman, and child in Canada. The idea is very prevalent in France that Canada is a country peopled by Canadians of French descent, whose sympathies naturally turn to their *Mère patrie*. It is perfectly true, and very natural, that in the French province of Quebec a great deal of practical sympathy for France has been shown. But the fact should not be lost sight of that it is in the English-speaking provinces that the greatest enthusiasm for France, and the greater part of the aid sent to her relief, has been found. And this is not only at the outset of the war, but through three and a half long years the readiness to help has never waned.

Early in 1915 cases of Canadian supplies destined for the French wounded began to arrive in Paris. They contained for the most part surgical dressings and warm clothing, the latter often accompanied by pathetic little notes expressing the sympathy of the sender. During the first 15 months of the war 28,590 cases were distributed to more than 1833 hospitals. In the autumn of 1915 a depôt for the reception of these cases was generously placed at the disposal of the Canadian Red Cross by the Société de l'Hygiène Alimentaire at 16, rue de l'Estrapade. For some months the distribution of these gifts was directed by the Canadian Commissioner-General, in collaboration with Colonel Blaylock. In June, 1916, M. Roy, the Canadian Commissioner, was obliged to give up the detail and routine of the work, which was undertaken by Mr. R. M. Hardie, directed by Colonel Blaylock from Boulogne. The number of cases sent over from Canada soon reached the total of 5000 per month. The task of distribution would have been almost impossible but for the action of the French Government, who built a great depôt for the reception of the supplies of about a dozen different *œuvres* for helping the French soldiers. Five of the 14 big wooden buildings had to be allotted to the stores of the Canadian Red Cross. The entire charge of the transport of these supplies from the different railway stations to the depôt and from the depôt to hospitals all over France was undertaken by the French Government, who organised a service of motor lorries driven by French soldiers. For some time these 5000 monthly cases continued to arrive; 3000 were given *en bloc* to the three branches of the French Red Cross Society to distribute themselves to the hospitals under their control, while the remaining 2000 were divided between the French military hospitals under the direction of the Service de Santé. As soon as the difficulties of ocean transport lessened the number of cases arriving from Canada, the distribution to the military and Red Cross hospitals was undertaken from the office at the Porte Dauphine.

Besides the gifts of hospital supplies, clothing, and comforts, contained in the 51,000 cases sent to France, the Canadian Red Cross Society has made many large grants not only directly to different French organisations but indirectly through English combinations for aiding the French.

Another more durable token of Canadian sympathy for France will be the model hospital now rapidly nearing completion which the Canadian Red Cross has erected at a cost of 1,500,000 francs at Joinville, a suburb of Paris on the outskirts of the Bois de Vincennes. This hospital will contain all the latest improvements both in construction and equipment, designed for the use of the French wounded, who will be cared for by the Laval University Unit, C.A.M.C. It will remain as a permanent gift to the French nation after the war.

At the Canadian General Hospital No. 8, at St. Cloud, under Lieutenant-Colonel Casgrain, the Canadian Red Cross Society has established advanced supply stores of comforts for the French wounded, and a recreation hut for the use of the large staff of orderlies and employees has also been built. Since November, 1916, the transport of the wounded and supplies for this hospital has been carried on by a section of the B.R.C. Motor Convoy, stationed at the Porte Dauphine. Five girl V.A.D.'s drive the motor ambulances that are a gift from Canada, and the expenses of the convoy are met by the B.R.C. and the Order of St. John. Parisians have been much interested in the apparition of these steadfast young women, neatly dressed in their workmanlike uniform, who steer their cumbersome vehicles through the city traffic with extraordinary skill. When the work is slack they occupy their time by running up to the territory evacuated by the Germans bearing Red Cross gifts to the refugees and the French hospitals of the district. They form, perhaps, the only spectacular part of a work that has been carried on so quietly that comparatively few even among the recipients guess how deep has been the feeling aroused in Canadian hearts by the valour and the suffering of the French nation.

Paris, Jan. 18th.

THE GENERAL PRINCIPLES OF WOUND CLOSURE AS ADOPTED BY THE INTER-ALLIED SURGICAL CONFERENCE.

General principles guiding the treatment of the wounds of war were laid down[1] by the Inter-Allied Surgical Conference held in Paris during March and May, 1917, and those dealing with primary and secondary closure of wounds, and the place of laboratory methods in determining the time to do so, may be recapitulated here in view of their great importance. The text runs as follows:—

Speaking generally, every wound of war should be regarded as either contaminated or already infected.

The aims of treatment should be: (*a*) To prevent the development of infection if the wound is merely soiled or to sterilise it if infection has already developed. (*b*) To close the wound secondarily by suture when "clinical" sterilisation has been obtained.

The general rule governing the treatment should be free opening up of the cavity, combined with resection of all contused and contaminated tissues and removal of all fragments of clothing or other foreign bodies. No deviation from this rule is justifiable except in certain instances of apparently clean wounds, and then the closest after-attention is essential.

The procedure above outlined may be followed in some instances by primary closure of the wound, notably in the case of wounded joints. Primary suture is only justifiable when the wound is of some hours' standing only (at the most eight hours), and under circumstances which allow the patient to remain under the observation of the same surgeon for 15 days.

If primary closure be not attempted secondary suture should be performed when the "clinical" sterility of the wound appears to warrant it.

The progress of the wound should be systematically controlled by a series of bacteriological examinations; thus a bacterial chart may be usefully constructed and the degree of sterility determined.

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[1] H.M. Stationery Office. Price 2*d*. net.

When circumstances demand the prompt evacuation of patients after the primary cleansing operation, a form of dressing capable of providing a continuous antiseptic action during the period of transport is desirable. Further researches in the direction of the most suitable form of dressing are highly desirable.

Several methods of progressive sterilisation of the wound are available, which permit of habitual resort to the method of secondary suture.

The Place of Laboratory Methods.

An experienced bacteriologist should be attached to every surgical unit of importance, together with capable assistants and a properly-equipped laboratory.

In the treatment of wounds of war intimate collaboration is necessary between the surgeon and the bacteriologist. The latter should observe the patient's wounds himself, and discuss with the surgeon the researches to be made and the course that should be taken.

The researches likely to prove most generally useful are bacteriological, cytological, and humoral.

The researches should not be restricted to a narrow scope, but, as a general rule, the following directions are suggested as likely to prove fruitful:—(*a*) The bacteriological condition of wounds immediately after their infliction. (*b*) The bacteriological condition of wounds before and after surgical intervention, also before and after a prolonged period of transport of the patient. (*c*) The bacteriological condition of wounds which continue to suppurate, or of those in which complications occur during the course of healing. (*d*) Bacteriological control of the progress of sterilisation of wounds with a view to determining their fitness for closure. (*e*) Bacteriological and biological control observations of the course of healing of wounds, made with a view to determination of the most efficacious methods of treatment. (*f*) Examinations of the blood; cultures, counts, tests of coagulability, investigation of defensive properties. The indications for transfusion of blood. (*g*) Special infections of certain anatomical regions; joints, serous membrane, connective tissue, muscle, brain, cerebro-spinal fluid; bacteriological, cytological, and humoral examinations. (*h*) The general indications for, and application of vaccine-therapy.

In addition to these laboratories attached to surgical units to aid in the ordinary practical treatment, laboratories for scientific research and the study of general questions of military surgery need to be created, or, where already existing, to be more highly developed.

AN appeal has been made for £1000 to increase the accommodation of the V.A.D. Hospital, Newton Abbot, by 50 beds. About £550 have been already received, including £200 from the Red Cross and St. John Ambulance Joint Fund.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following are the results of the Triple Qualification Examinations:—

FIRST EXAMINATION.

John Matthew.

Physics.—William Paris, John Logan Carruthers, Andrew Allen Dewar, and Enid Anne Williams.

Biology.—Lilian Mary Williams, Rhys Grier Thomas Davies, and Enid Anne Williams.

Chemistry.—Charles Thomas Hastings.

SECOND EXAMINATION.

Agnes Macilwraith Hill, John Bernard O'Neill, Aubrey Claud Forster Barrow, Gracie Olwen Davies Evans, Janet Adeline Agnes Sang, James MacGlashan, Henry Aidan Newton, John Morrison McCubbing, Donald Mackay, and Ben Alexander Cold.

Physiology.—Alexandra Mary Limont.

THIRD EXAMINATION.

Jane Copes, Iain Ross Macphail, Reginald Joseph Patchett, Daniel Adrian Stegman, Jatindra Kumar Sen, and Leo Hugo Paries.

Materia Medica.—Thomas Francis Kelly and Robert Charles Dow.

FINAL EXAMINATION.

William O'Gorman Donoghue, Christopher Robert Cecil Moon, and Arukatti Patabendige Frederick Abeysuriya.

Surgery.—Hugh Millar.

Midwifery.—Hugh Millar and Edward Spence.

Medical Jurisprudence.—Jacob Johannes van Niekerk, James Miller Speirs Lawson Lamb Steele, William Brownlee Watson, Ben Chiefitz, Victor Albert Rankin, Apcar Calustian, James Charles Meek, John Kehler Steel, and Samuel Amery Faulkner.

CENTRAL MIDWIVES BOARD.—Special meetings of the Central Midwives Board were held at Queen Anne's Gate Buildings, Westminster, on Jan. 9th and 10th, Sir Francis H. Champneys being in the chair. Certain midwives were struck off the roll, the following charges amongst others having been brought forward:—

A midwife neglecting to inquire as to the patient's health and bodily condition and the course of her previous pregnancies, and to advise as to the personal and general arrangements for the confinement, as required by Rule E. 1. The patient suffering from a purulent discharge during pregnancy, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (2). A midwife employing an uncertified person as her substitute, contrary to the provisions of the Midwives Act, 1902, Section 1 (4); neglecting to attend the patient as required by Rule E. 12, and making no provision for the services of a duly qualified substitute on her behalf. A midwife being guilty of misconduct in cohabiting during the years 1914, 1915, and 1916, or parts thereof, with a married man who was not her husband. The midwife not being scrupulously clean in every way, as required by Rule E. 1; not taking and recording the pulse and temperature of her patients at each visit, as required by Rule E. 14; not keeping her records of pulse and temperature in a note-book or on a chart carefully preserved, as required by Rule E. 14; and that having advised medical aid to one of her patients, she neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a). A child suffering from serious skin eruptions marked by watery blisters, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5).

At the meeting on Jan. 10th a circular letter was considered from the Child Welfare Inquiry Office, asking the Board to appoint a representative to attend a national conference to be held on Feb. 14th to consider a scheme adopted by the Child Welfare Council recommending changes in the law with regard to unmarried mothers and the position of illegitimate children. The Board decided (*a*) that the Child Welfare Council be thanked for its letter; (*b*) that Mrs. Josephine Latter be appointed the Board's representative to attend the conference.—A letter was considered from the deputy medical secretary of the British Medical Association calling the Board's attention to an advertisement by a certified midwife offering to attend patients at their own homes for twilight sleep treatment. The Board decided that the certified midwife be cited to appear before the Board.—The secretary reported that a candidate for examination on Feb. 1st next had tendered a certificate of birth which had been tampered with. The Board decided that (*a*) the candidate be not admitted to the February examination, and (*b*) that the attention of the authorities of the British Hospital for Mothers and Babies be directed to the matter, and that they be informed that the Board considers them responsible for seeing that candidates coming up for the Board's examination do not present certificates which have been tampered with.

BRISTOL EYE HOSPITAL.—The annual meeting of the subscribers to the Bristol Eye Hospital was held on Jan. 18th, under the presidency of the Lord Mayor. The medical report stated that during 1917 the in-patients admitted numbered 436, and 8693 out-patients were treated. The financial statement showed that the ordinary income was £2697, and the expenditure amounted to £2891. The Lord Mayor made a strong appeal for increased financial support.

THE RESEARCH DEFENCE SOCIETY.—The Research Defence Society, which was founded in 1908, and the Association for the Advancement of Medicine by Research have been united into one society, which will retain the name and official address of the Research Defence Society. All such communications as used to be made to the Association for the Advancement of Medicine by Research should now be made to the Research Defence Society, of which Mr. Stephen Paget, F.R.C.S., is honorary secretary, at 21, Ladbroke-square, London, W. 11.

FREE LECTURES ON ANIMAL LIFE AND HUMAN PROGRESS.—In connexion with the Imperial Studies Committee of the London University, a course of nine public lectures on Animal Life and Human Progress will be delivered at King's College, Strand, London, on successive Wednesdays, at 5.30 P.M., beginning on Jan. 30th and ending on March 27th. The subjects for the lectures include the Origin of Man, the Future of the Science of Breeding, the Tse-Tse Flies and Colonisation, Our Food From the Sea, and Museums and Research. Among the lecturers are Professor G. C. Bourne, Professor Arthur Dendy, Professor F. Wood Jones, Dr. R. T. Leiper, and Professor J. Arthur Thompson. Tickets admitting to reserved seats and a full syllabus can be obtained from the Publications Secretary, King's College, Strand, London, W.C. 2.

LIVERPOOL MEDICAL INSTITUTION.—At the annual meeting, held on Jan. 17th, the following list of officers and members of the council was adopted. Those marked * did not hold the same office last year. President: W. Thelwall Thomas. Vice-presidents: D. Douglas-Crawford, G. S. Stansfield, *K. W. Monsarrat, and *Llewellyn Morgan. Treasurer: E. Thurstan Holland. General secretary: Hubert Armstrong. Secretary of ordinary meetings, Walter Oram; secretary elect, T. C. Litler-Jones. Secretary of pathological meetings, J. Martin Beattie; secretary elect, H. Leith Murray. Librarian and editor of the Journal: R. W. MacKenna. Council: T. N. W. Barlow, H. Y. Fisher, John E. Gemmell, W. J. Bennett Jones, A. Betts Taplin, P. F. Tinne, *J. Hill Abram, *W. Murray Cairns, *F. J. S. Heaney, *Mary B. Lee, *C. J. Macalister, and *Courtenay Yorke.

Correspondence.

"Audi alteram partem."

DIAGNOSIS AND TREATMENT OF DYSENTERY OCCURRING IN THE BRITISH SALONIKA FORCE.

To the Editor of THE LANCET.

SIR,—The results obtained by Major Duncan Graham at Salonika (THE LANCET, Jan. 12th) with cases of severe dysentery—that is, cases passing 20 stools or more each day—must be considered remarkably good. The death-rate among these cases was only 1 per cent. In passing it may be remarked, although the conditions may not be strictly comparable, that the mortality in Germany amongst the dysenteric cases during the past year was as high as 20 per cent. He alludes to a paper of mine published in 1916 entitled "An Experimental Investigation on Diarrhœa and Vomiting of Children" (*Quarterly Journal of Medicine*, vol. ix., April, 1916), and this paper apparently gave him the support from laboratory and animal observations for his clinical treatment of the cases. As this is the first allusion, so far as I am aware, to a paper which, whatever its scientific shortcomings, seems to me to have important practical bearings, especially at this time, one can only conclude that it has suffered the fate of so many English pieces of laboratory work and been lost. I should be much obliged, therefore, if I may have the opportunity of emphasising some of the conclusions to which I was led by these investigations. I may add that these points were treated more fully by me in the Brown Institution lectures of 1915 and 1916, delivered at the Royal College of Surgeons, and their application to dysentery, then raging fiercely in the Eastern theatres of war, was discussed.

The investigations were started under the auspices of the Local Government Board in a mood of protest against what appeared to me to be the ineffectiveness of bacteriological work in cases of acute alimentary disturbances, and more particularly in diarrhœa and vomiting of children. Bacteriologists have had a monopoly in such investigations and, while they were discussing among themselves various types of bacilli found, the diseases ran their normal course and the mortality was appallingly high. Throughout this time, the physiological or abnormal physiological condition of the patient was hardly thought to be of sufficient importance to warrant the attention of the investigator. I am speaking here only of the researcher and not the practitioner and physician.

This research, in attempting to put the question of saline injection on to an experimental and scientific basis, impressed upon me one fact. This is, that all drug treatment and all serological treatment must be more or less ineffective so long as the body fluids of the patient are below normal. The difference in the resistance of animals to toxic agencies, according as to the volume of body fluids in such animals, is extraordinary. By toxic agencies I mean in this case those substances which are liberated from the alimentary canal and probably only from its mucous membrane into the blood stream under abnormal conditions, although they are a normal constituent of the mucous membrane. The particular substance used by me was β-imidazolyl-ethylamine, a substance present in the mucous membrane of the alimentary canal in the normal state, and shown by Dale to have the shock-producing properties so commonly met with in acute diseases.

While the importance of the maintenance of the body fluids to the normal or above normal in dysenteric cases is experimentally and, in view of Major Graham's results, clinically proved, I should like to call attention to another point of view which, while I have had no opportunity of putting it on an experimental basis, nevertheless seems to me to merit consideration. This is the part played by diminished body fluids in the onset of these infections. For reasons explained in my paper, the main one being the suppression of the alimentary secretions in thirst, it seems to me likely that dysentery and diarrhœa and vomiting of children become epidemic in the hot weather, partially, at any rate, in consequence of the easy access to the intestine which bacterial agencies have when the body fluids are below normal owing to the increased loss of water by evaporation. To put what is in my mind in a crude way—it seems possible that it is less dangerous to drink a large amount of bacteriologically contaminated water so as to avoid real thirst than a small quantity of the same water when thirsty. As regards a simple prophylactic treatment of summer diarrhœa in children I think it might be interesting to run a campaign in the summer months advocating the giving to all infants an abundant supply of water. The presence of fluid in the intestine has such a marked inhibitory influence on the absorption of toxic substances from the alimentary canal while, at the same time, the withdrawal of fluid is so detrimental to the efficient working of the organs of the body that I am convinced there would be a marked diminution in the incidence and mortality of this scourge if this practice were followed out.

During the past two years I know that some of the more distinguished physiologists in this country have turned their attention to this form of experimental medicine, but the field remains almost untouched. May I urge that the physiological condition of the experimental animal receive greater consideration in future from the investigator of disease? To take one small point. Much attention has been given to the toxicity of, and toxic products produced by, specific bacilli found in acute alimentary infections. On the other hand, but little attention has been given in this country to the interesting work published in the *Journal of Experimental Medicine* by Whipple, Stone, Bergheim and Hartwell, and others, who have shown the extreme toxicity of products of the alimentary canal mucous membrane itself, the formation and liberation of which is probably only influenced to a small extent by bacteria and, in any case, by non-specific bacteria. Surely this latter type of work merits consideration.—I am, Sir, yours faithfully,

EDWARD MELLANBY.

Household and Social Science Department (London University), Campden-hill, W., Jan. 14th, 1918.

THE RETRACTION OF BLOOD-CLOTS.

To the Editor of THE LANCET.

SIR,—May I trespass further on your space to reply to Captain d'Este Emery's letter in your issue of Jan. 5th? He appears to think that I questioned his results; this is not the fact, but I do not concur in his deduction that a small size of tube is an important factor in producing a large yield of serum from blood. I think it may have some influence, but a very minor one in comparison with the temperature conditions used, and Captain Emery's own figures seem to prove this, as the largest but one size of tubing when used at a suitable temperature gave *over* the "full theoretical yield"—i.e., one could not expect to improve on it even using what he considers the best sized tubes. It was for this reason that I gave the average results of bleeding a number of rabbits under practically those temperature conditions which Captain Emery has laid down as being most productive, but in tubes more than double the size of the largest he used. If, having found the optimum temperature, he had again tested the serum yield in different sizes of tubes under these same conditions, I should have been more impressed with the result.

Captain Emery only gives us two examples with each size of tube, some of which differ considerably—viz., 21·5 per cent. and 6·3 per cent. in the 9 mm. tubes; and being well aware that these differences occur be the explanation that which Captain Emery suggests or not—for greater accuracy I gave the average of 27 rabbits. I have tested thousands of samples of rabbits' blood in quantities of 0·5 c.cm. at a time in 3 mm. tubing, and I certainly do not obtain larger amounts than with the 38 mm. tubes; indeed, I sometimes have difficulty in obtaining even the necessary 0·1 c.cm., a 20 per cent. yield only, as against 64 per cent. in the larger tubes. His little lecture, therefore, advising me to try for myself before speaking is somewhat unnecessary.

Moreover, while writing the above, an officer kindly asked if he should try the experiment I had suggested under the better temperature conditions we use. He accordingly took six tubes, 2 of 4–5 mm., 2 of 10 mm., and 2 of 15 mm. diameter, and when I was killing some rabbits he put 1 c.cm., 2·5 c.cm., and 5 c.cm. of freshly drawn arterial blood from the same rabbit into these respectively, which filled the different sized tubes to about the same level. They were

at once incubated at 37° C. for a full hour, the clot was then partially separated with a wire and at the end of 24 hours the clot and serum separately weighed. The 4·5 mm. tubes produced about 61·6 per cent. and 60·4 per cent. of serum by volume as compared with the clot, the 10 mm. 60 per cent. and 54·3 per cent. and the 15 mm. 57·7 per cent. and 55·3 per cent. These comparatively slight differences, when compared with the marked differences Captain Emery obtained at a less suitable temperature, are within the limits of experimental error. In my opinion this experiment strongly supports my contention that temperature altogether outweighs size of tubing as a factor of importance.

As the object of Captain Emery's experiments was an attempt to find out under what conditions the best yield could be obtained, I quite fail to follow him when he says, "the test should not be carried out in such a manner as to give the maximum retraction in the largest tube." I should have thought that was his chief object, and as I only mentioned using one size in my letter—i.e., 38 mm.—there was no "largest" as far as I was concerned. I do not know the "full theoretical yield" for rabbit's blood, but Captain Emery surely does not suggest that I should have averaged much over 65 per cent. of serum had I used smaller tubes?

I am, Sir, yours faithfully,

T. G. M. HINE,
Major, R.A.M.C.

Central C.S.F. Laboratory, Caxton-street, S.W., Jan. 10th, 1918.

THE AMENDMENT OF LUNACY LEGISLATION.

To the Editor of THE LANCET.

SIR,—The treatment of shell-shock and other mental cases arising from the war has accentuated the necessity for amendment of the existing Lunacy Laws

A Select Committee of the Medico-Psychological Association is now sitting to consider the best method for securing the legal changes which have been long overdue in this direction.

The committee invites information from medical men and others intimating their experience of the defects in the present system and indicating what legislative alterations are in their opinion desirable.

Communications should be sent to the address given below.

We are, Sir, yours faithfully,

H. WOLSELEY-LEWIS, M.D., F.R.C.S. (Chairman).
R. H. COLE, M.D., F.R.C.P. (Secretary).

10, Chandos-street, London, W. 1, Jan. 19th, 1918.

"TWILIGHT SLEEP."

To the Editor of THE LANCET.

SIR,—In view of the interest which the subject of twilight sleep is exciting at the present time I am anxious to obtain authentic details of any cases in which this method of narcosis has produced dangerous symptoms or a fatal result in either the mother or the child.

If any of your readers can furnish me with the particulars of any such cases I shall be greatly obliged.

I am, Sirs, yours faithfully,

Wimpole-street, W., Jan. 16th, 1918. G. BLACKER.

THE CORNWALL SANITARY COMMITEE AND TUBERCULOSIS.—At the last meeting of the Cornwall sanitary committee the acting medical officer of health stated that many cases of tuberculosis were not notified, and many cases which had been under medical treatment for months, and even years, were notified a few hours before death and sometimes after death. It was eventually decided to ask local authorities to inform their medical officers of the importance of early notification of tuberculosis and to request them to warn medical practitioners that cases should be notified within 48 hours. In this connexion it is interesting to note, writes a correspondent, that £1220 have been received towards the scheme for purchasing the Tehidy Estate as a war memorial for Cornwall and converting it into a sanatorium for tuberculosis. £10,000 were required for the purchase of the estate, but an additional £7000 are necessary for the provision of a pavilion, hut accommodation, electric light, purchase of land for the provision of a farm colony, and other improvements.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: R. N. Gibson, J. A. Hamilton.

The following appointments are notified:—Staff-Surgeon: A. T. Rivers to Chatham Hospital. Surgeons: F. E. Fitzmaurice to *Victorious*; and W. G. Thwaytes to *Alecto*. Temporary Surgeons: A. L. P. Gould, H. C. Broadhurst, and R. K. Shaw to *Victory*, for R.N. Division: R. Pollock to *Dublin*; and J. D. Clarke to *Pembroke*, for Sailors' Home Auxiliary Hospital, Chatham.

ARMY MEDICAL SERVICE.

Col. H. O. Trevor is placed on retired pay.

Col. C. K. Morgan, C.M.G., to be an Assistant Director of Medical Services at the War Office.

TERRITORIAL FORCE.

Temp. Major S. G. Chown, Canadian A.M.C., to be Deputy Assistant Director of Medical Services, vice Temp. Capt. H. B. Logie, Canadian A.M.C.

Temp. Capt. W. S. Macdonell, Canadian A.M.C., to be Deputy Assistant Director of Medical Services, vice Temp. Major E. A. Neff, Canadian A.M.C.

ROYAL ARMY MEDICAL CORPS.

Majors to be Lieutenant-Colonels: E. B. Knox, J. Matthews, D.S.O., P. S. O'Reilly, C.M.G., A. M. McLaughlin, J. A. Hartigan, D.S.O., J. F. Martin, C.M.G., E. McDonnell, D.S.O., (Brevet Lieut.-Col.) A. H. Safford, T. E. Fielding, D.S.O., C. H. Straton, R. T. Brown, D.S.O., E. W. Siberry, B. F. Wingate, D.S.O., J. W. West, C. S. Smith, A. F. Carlyon, W. C. Croly, (Brevet Lieut.-Col.) P. H. Henderson, D.S.O., W. M. H. Spiller, A. D. Jameson, B. B. Burke, D.S.O., P. C. Douglass, W. L. Baker, F. W. Cotton, F. M. Parry, B. R. Dennis, W. J. P. Adye-Curran, J. Powell, W. Bennett, D.S.O., T. Biggam, B. S. Bartlett, D.S.O., D. O. Hyde, D.S.O., A. E. Hamerton, D.S.O., G. J. Houghton, J. G. Churton, A. D. Waring, A. F. Weston, J. Dorgan, C. H. Furnivall, (Brevet Lieut.-Col.) FitzG. G. Fitzgerald, D.S.O., F. P. Lauder, J. Tobin, J. P. J. Murphy, A. R. Greenwood, R. L. Argles, J. G. Foster, F. S. Walker, L. M. Purser, D.S.O., (Brevet Lieut.-Col.) F. McLennan, J. H. Robinson, P. S. Lelean, C.B.

Capt. G. W. Ellis, R.A.M.C., T.F., to be Deputy Inspector of Quartermaster-General Services (graded for purposes of pay as Deputy Assistant Quartermaster-General) and to be temporary Major whilst so employed.

W. H. Mackenzie to be temporary Major whilst in charge of Glenlomond War Hospital, Kinross.

Temporary Lieutenants to be temporary Captains: J. S. Mitchell, G. S. Hett, J. H. Mayston, V. Glendining, W. B. Cooper, G. R. Potter, J. Pender, T. Winning, B. Barnett, J. R. Burnett, P. C. Prince, G. T. Birks, J. Carrick, B. Muir, C. H. Burgess, E. H. White, P. A. Leighton, L. B. C. Trotter, M. Raper, M. R. Lawrence, H. Dearden, B. H. Woodyatt, J. Chambre, J. Gardner, T. Burrell, A. C. Parsons, J. G. Heath, J. R. O'Brien, A. P. Thom, E. C. B. Ibotson, J. Hogg, J. B. Howell, R. L. Jones, A. M. Crawford, W. T. Hardie.

M. Bronk to be temporary Honorary Lieutenant.

Officers relinquishing their commissions:—Temporary Captains: R. J. Rogers, R. Brookes, J. S. Fowler, G. Thom, H. M. Churchill, W. J. Weaver, J. Bain, C. J. Singer, D. McM. Dickson, B. E. Spurgin, W. E. Barker, A. J. Beadel, A. Davidson, H. E. Dyson, D. Kennedy, T. Meagher, M.C., F. Barnes, R. J. English, M. W. Talbot (and is granted the honorary rank of Captain), T. S. Brook, R. C. J. Stevens, C. H. Mossop, V. E. Sorapure, H. H. Tipping, E. Purcell, C. Berry, W. A. Berry, J. S. English, G. W. Fleming, J. C. Wilson, I. A. Dowling, J. Craig, E. Ashby, C. W. J. Dunlop, J. A. Montgomery, W. A. Murphy, J. W. Harvey, T. H. Twigg, D. M. Clements, J. G. Higgins, F. P. Grove, S. Lyle, J. P. O'Connor, E. C. E. Van Ryck (on account of ill-health contracted on active service), J. A. Cameron, A. E. Sutton, A. Stewart (on account of ill-health contracted on active service), F. W. Murray (on account of ill-health contracted on active service), F. C. Drew (on account of ill-health), G. Morris (on account of ill-health). Temporary Lieutenants: A. McCreadie, B. S. Hyslop, H. D. Pollard, P. J. Holmes, T. M. Guthrie, H. R. Sinclair, F. W. Cheese, W. E. Ord, F. C. Sprawson, J. Joung, H. G. Peel, T. Y. Finlay, E. Miskin, T. R. Wilshaw. Temporary Honorary Lieutenant: E. K. le Fleming (on ceasing to be employed with British Red Cross Hospital, Netley).

SPECIAL RESERVE OF OFFICERS.

Major J. O. Summerhayes, D.S.O., from R.A.M.C., to be Major.

G. N. Groves, from Edinburgh University Contingent, O.T.C., to be Lieutenant.

TERRITORIAL FORCE.

Major T. A. Barron to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Major J. R. Harper to be acting Lieutenant-Colonel whilst commanding a Stationary Hospital.

Major R. B. Sidebottom resigns his commission on account of ill-health, and is granted permission to retain his rank and to wear the prescribed uniform.

Surg.-Capt. G. D. Kettlewell, from Royal Garrison Artillery, to be Captain.

Capt. W. Dyson to be Major.

Capt. (temp. Major) D. S. Sutherland relinquishes his temporary rank on alteration in posting.

Capt. C. F. Coombs is restored to the Establishment.

J. Harrison to be temporary Major, Northumberland Medical Volunteer Corps.

T. D. Manning to be temporary Captain, Dorsetshire Medical Volunteer Corps.

J. H. Yolland to be temporary Lieutenant-Colonel, Kent Medical Volunteer Corps.

E. A. Evans (late Captain, R.A.M.C.) to be temporary Captain, Glamorganshire Medical Volunteer Corps.

P. G. H. Bayon to be temporary Captain, Hertfordshire Medical Volunteer Corps.

TERRITORIAL FORCE RESERVE.

Capt. A. Coleridge, from R.A.M.C., to be Captain.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Classification of Men in the Army.

IN the course of the debate on the motion for the second reading of the Military Service Bill on Thursday, Jan. 17th, some reference was made to the classification of men in the Army, and the use to which they were put. Sir DONALD MACLEAN, who is the chairman of the London Appeal Tribunal, said that men were being, and unless some very drastic action was taken would continue to be, placed in the Army under conditions which could have no other result than that they would break down physically and would become a burden on the Army and a charge on the National funds. He also urged that some further particulars should be added for the guidance of tribunals respecting the rather uninforming description of Grade 3.

Mr. SMALLWOOD, in a maiden speech, complained of the cast-iron method of routine applied by the War Office to men. He drew attention also to the strict application of the rules in a hospital where his son had been. It was the last night his son lived, and he was not permitted to stop with him.

The debate was concluded in secret session.

Midwives (Ireland) Bill.

It has been found possible to adjust the differences of opinion which have arisen on the Midwives (Ireland) Bill. Mr. DUKE, the Chief Secretary, obtained the second reading of the measure late on the evening of Tuesday, Jan. 22nd. The House of Commons went formally into Committee on the Bill, but it did not proceed very far with it. Mr. Duke stated that the amendments which were proposed would be submitted later in the week.

Reconstruction of the Poor-law.

Dr. ADDISON, the Minister of Reconstruction, has laid before Parliament the report of Sir DONALD MACLEAN'S subcommittee on Local Government Reconstruction dealing with the transfer of the functions of the Poor-law authorities in England and Wales. The report recommends the abolition of Boards of Guardians and Poor-law Unions, and the merging of the functions of the Poor-law authorities in those of the County Councils and the County Borough Councils.

HOUSE OF COMMONS.

WEDNESDAY, JAN. 16TH.

Reconstruction and the Poor-law.

Answering Sir JOHN SPEAR, who asked a question relating to the report of the subcommittee respecting the transfer of the functions of the Poor-law authorities in England and Wales, Dr. ADDISON (Minister of Reconstruction) said that he was hoping to arrange for the publication of the report without delay in order to enable all those interested to consider the proposals of the committee.

Housing in Scotland.

Mr. WHITEHOUSE asked the Secretary for Scotland whether he had now considered the Report of the Royal Commission on Housing in Scotland; and whether he proposed to introduce emergency legislation to deal with the more urgent of the evils disclosed.—Mr. MUNRO replied: I have considered this report and am hopeful that the more pressing needs of the situation can be met by administrative action without waiting for legislation. My honourable friend, however, may rest assured that the recommendations of the commission as to legislation will not be lost sight of.

Mr. TENNANT: Are we to understand that in the event of it not being possible for the right honourable gentleman to carry out the recommendations of the Royal Commission as he could wish, he will then introduce legislation in the coming session?—Mr. MUNRO: That is a matter for the leader of the House, but I hope to be able to introduce legislation if it should be found necessary.

THURSDAY, JAN. 17TH.

Housing Schemes.

Mr. CHANCELLOR asked the Parliamentary Secretary to the Local Government Board to state to how many local authorities the circular on housing of July 28th was sent; how many furnished the information asked for; how many had started housing schemes; how many had undertaken to do so; what was the total number of houses projected; and what was their total estimated cost.—Mr. STEPHEN WALSH replied: The circular referred to was sent to 1806 local authorities under the Housing Acts. Up to Jan. 14th 1447 authorities had furnished the returns asked for. The schemes to which the circular has reference are schemes to be undertaken after the war, and 870 authorities have either prepared, are preparing, or have expressed willingness to prepare schemes subject to substantial financial assistance being forthcoming from the State. The information furnished by those authorities in their returns would point to the possibility of some 150,000 houses being erected by them subject to such financial assistance. No reliable estimate of the cost can at present be given.

Midwives (Ireland) Bill.

General MCCALMONT asked the Chief Secretary for Ireland whether the Government proposed to proceed with the Midwives (Ireland) Bill during the present session.—Mr. DUKE answered: Certain provisions of the Bill are not yet agreed upon with the parties concerned. Unless agreement is arrived at in the course of the week, I think it will not be practicable to proceed with the Bill before the Prorogation.

General MCCALMONT: Will the right honourable gentleman take steps to see that agreement is reached, if possible?—Mr. DUKE: My various duties prevent me going about trying to induce people to be reasonable over proposals of legislation. I hope that the public interest will induce people to be reasonable. If they are not, I cannot promise to use personal exertions where such a large area is involved.

Treatment of Disabled Soldiers.

Sir MONTAGUE BARLOW asked the Under Secretary for War (1) whether there were a number of undischarged men awaiting treatment, fitting of limbs, training, &c., for whom at present there was no accommodation at Roehampton or elsewhere, and, if so, how many; and (2) whether, in the case of undischarged men waiting in their homes for admission to Roehampton or other centre, he would consider the desirability of making provision for their training, especially when the waiting period extended over many months; and whether arrangements could be made between the War Office and the Pensions Ministry with a view to carrying out this proposal.—Mr. MACPHERSON replied: All the men referred to are receiving treatment, but there are some 3000 awaiting artificial limbs. The question of training is a matter for the Minister of Pensions, and I understand that he is making suitable arrangements. The Army medical authorities are, of course, always glad to help in any direction which my right honourable friend may indicate.

Soldiers and Unqualified Practitioners.

Mr. CHANCELLOR asked the Financial Secretary to the War Office whether reduction or loss of pension, gratuity, or other benefit to which they would otherwise be entitled would be inflicted on officers or men who, after treatment by registered practitioners had failed to cure their injury or disease, sought health and restoration by consulting unregistered medical men.—Mr. FORSTER wrote in reply: The War Office is only concerned as regards gratuities or pensions to severely wounded officers. The only deduction that might be made would be in connexion with any improvement in their condition. Instructions as to the conditions under which officers and soldiers may consult unqualified practitioners have been issued recently, and I will send my honourable friend a copy.

Army Council and the Medical Service.

Major DAVID DAVIES asked the Under Secretary for War whether, in view of the resignation of Sir ALFRED KEOGH and the appointment of his successor, the Secretary for War was now prepared to reconsider the question of direct representation on the Army Council of the Royal Army Medical Corps, thus raising the status of the Army Medical Service to the position accorded to it in the military organisations of our Allies.—Mr. MACPHERSON replied: It is not intended to place the Director-General of Army Medical Services on the Army Council, but whenever matters affecting medical organisation or administration are before the Council the Director-General will be called in to give the Council the benefit of his advice.

MONDAY, JAN. 21ST.

Hospital Treatment of Discharged Soldiers.

Sir HENRY HARRIS asked the Pensions Minister whether he had come to any agreement with the London civilian hospitals as to the terms and conditions on which discharged disabled men would be treated by these institutions; and, if so, whether he would have such terms published immediately.—Mr. HODGE replied: Arrangements have now been made with both London and provincial hospitals, and the terms will be communicated to all Local War Pensions Committees forthwith.

Sir HENRY HARRIS asked whether the right honourable gentleman was aware of the difficulty which was being experienced in London in obtaining in-patient treatment for discharged disabled men, which was largely due to the sudden withdrawal by the War Office of facilities for such treatment in military hospitals; whether he was aware that many beds in civil hospitals were occupied by soldiers; and whether he proposed to take steps to have these beds made available for discharged disabled men and to supplement the

inadequate accommodation in London, having regard to the claims of ordinary civilians.—Mr. HODGE answered: I am fully aware of the difficulties referred to, and I have represented the matter to the War Office. In response to my representation, it has been arranged that the War Office will recognise the prior claim of the Ministry to the accommodation in civil hospitals.

Sir HENRY HARRIS: Does the right honourable gentleman understand that this matter is a very urgent one and that a considerable number of men are now waiting for treatment, and also that some of them have only been discharged from military hospitals on the express understanding that they would receive further treatment from these hospitals, which is now denied them? Will the right honourable gentleman also answer the last part of my main question?—Mr. HODGE: I have just instituted a medical department, presided over by a very eminent surgeon. They have the whole matter in hand. I am hopeful, under their expert advice, that the difficulties referred to will be rapidly swept away.

Sir WILLIAM COLLINS: Is the right honourable gentleman aware that more than 1600 beds have since the beginning of the war been added to the accommodation of the voluntary hospitals in London in order to meet the case.—No reply was given.

TUESDAY, JAN. 22ND.

Venereal Disease and the Army.

Mr. PETO asked the Under Secretary for War whether it was proposed to take any further steps to stop the spread of infection by venereal poisons among British troops; whether there was any Army order which forbade or discouraged the necessary prophylactic medical measures; and whether it was proposed to issue an Army order instructing Army medical officers of superior rank to take the necessary action as a part of their regular medical duties.—Mr. MACPHERSON replied: There is no Army order authorising the use of such preventives or forbidding them. The answer to the last part of the question is in the negative.

Mr. PETO: Does the honourable gentleman not think that the time has arrived when prejudices should no longer be allowed to diminish the man-power of the Army?—Mr. MACPHERSON: As my honourable friend will recognise, this is rather a national question and not so much a military question.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

AUSTRALIA, COMMONWEALTH OF.—One Biochemist, salary £450; Two Senior Bacteriological Technical Assistants, salary £336; and Three Bacteriological Technical Assistants, salary £216 per annum.

BIRKENHEAD UNION.—Junior Resident Assistant Medical Officer. Salary at rate of £300 per annum, with board, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street.—Resident Surgical Officer. Salary £250 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

DERBY, DERBYSHIRE SANATORIUM FOR TUBERCULOSIS, Walton-lane, near Chesterfield.—Resident Assistant Medical Officer. Salary £350 per annum, with board, &c.

DEWSBURY AND DISTRICT GENERAL INFIRMARY.—House Surgeon. Salary £250 per annum, with board, &c.

DUNDEE SCHOOL BOARD.—Female Assistant Medical Officer. Salary £350 per annum.

FULHAM TUBERCULOSIS DISPENSARY, Town Hall, Fulham, S.W.—Chief Tuberculosis Officer. Salary £500 per annum.

GLAMORGAN COUNTY COUNCIL.—Temporary Female Medical Officer. Salary at rate of £350 per annum.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Gynæcologist.

HUDDERSFIELD COUNTY BOROUGH.—Female Assistant Medical Officer of Health. Salary at rate of £350 per annum.

ITALIAN HOSPITAL, Queen's-square, W.C.—House Surgeon for six months. Salary at rate of £150 per annum, with board, &c.

MAIDSTONE, KENT COUNTY OPHTHALMIC HOSPITAL.—Temporary Aural Surgeon. Salary 50 guineas for six months, with lunch.

MANCHESTER CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £400 per annum. Also Female Assistant School Medical Officer. Salary £350 per annum.

OLDHAM COUNTY BOROUGH.—Assistant Schools Medical Officer. Salary £325 per annum.

OLDHAM ROYAL INFIRMARY.—Third House Surgeon. Salary £225 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Medical Officer in charge of Electrical Department, for six months. Salary at rate of £100 per annum.

RHONDDA URBAN DISTRICT COUNCIL.—Temporary Assistant Medical Officer of Health and School Medical Officer. Salary £350 per annum.

ROCHDALE INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £400 per annum, with board, &c.

SALFORD ROYAL HOSPITAL.—Honorary Assistant Surgeon.

SOUTHAMPTON COUNTY BOROUGH ISOLATION HOSPITAL.—Resident Medical Officer. Salary £400 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.—Female House Surgeon for six months. Salary at rate of £100 per annum, with board, &c.

STOKE-ON-TRENT COUNTY BOROUGH.—Temporary Tuberculosis Officer. Salary £500 per annum.

SWANSEA EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £350 per annum.

UNIVERSITY OF LONDON.—External examiners.

WIMBLEDON BOROUGH, PUBLIC HEALTH DEPARTMENT.—Female Assistant Medical Officer of Health. Salary £350 per annum.

Births, Marriages, and Deaths.

BIRTHS.

BUTTERS.—On Jan. 7th, at Epsom, Surrey, to Helen, wife of Major T. L. Butters, C.A.M.C., a son.

CAMPS.—On Jan. 16th, at Old Udny Cottage, Teddington, the wife of Percy W. L. Camps, M.B., F.R.C.S., Lieut. R.A.M.C. (temp.), of a son.

CLEMENTS.—On Jan. 16th, at St. Paul's-square, Burton-on-Trent, the wife of Captain W. L. Clements, R.A.M.C., of a son.

FETTES.—On Jan. 17th, at Carden-terrace, Aberdeen, the wife of Dr. J. Fettes, New North-road, London, of a son.

MACKENZIE.—On Jan. 19th, the wife of Surgeon K. A. I. MacKenzie, M.B., R.N., of a son.

MARRIAGES.

HALLAM—MCGREGOR.—On Jan. 15th, at St. John's Church, Princes-street, Edinburgh, by the Rev. G. F. Terry, F.S.A., Martin Hallam, Temp. Capt., R.A.M.C., to Eunice Jean, elder daughter of Mr. and Mrs. McGregor, Balmenach, Cromdale.

HOYLE—HALLETT.—On Jan. 16th, at St. Margaret's Church, Cardiff, Dr. William Evans Hoyle to Florence Ethel Mabel, widow of J. H. Hallett, J.P., of Radyr Chain.

PAYNE—ORR.—On Jan. 16th, at St. Andrew's Church, Ealing, W., Reuben Woodland Payne, Surgeon, R.N., to Janet Cochran, elder daughter of the late R. Gilmour Orr, of "El Cantor," Argentine, and Mrs. Orr, "Glengarry," Ealing, W.

THOMPSON—LAMBRIGOT.—On Jan. 12th, at St. François Xavier Church, George L. Thompson, M.B., Ch.B. Edin., to Marie Antoinette Lambrigot, step-daughter of Controller General Audibert, Commander of the Legion of Honour, and Mrs. Audibert, 67, Boulevard des Invalides, Paris.

WAIN—MITCHELL.—On Jan. 19th, at Ripley Parish Church, Captain Douglas Wain, att. R.A.M.C., of The Grange, Ripley, Derbyshire, to Gladys Elsie Mitchell, of Loughborough.

WHARTON—REID.—On Jan. 17th, at Culmore Parish Church, Londonderry, John Wharton, Captain, R.A.M.C. (T.F.), St. John-street, Manchester, to Dorothy Mary, only daughter of J. Kelso Reid, LL.D., and Mrs. Reid, The Elms, Londonderry.

DEATHS.

CABLE.—On Jan. 18th, George Hughes Cable, M.R.C.S.E. & L.S.A., Gloucester-place, Greenwich, aged 74 years.

HOSSACK.—On Jan. 5th, in Calcutta, William Cardiff Hossack, M.D., D.Ph., Port Health Officer, Calcutta.

KING.—On Jan. 14th, at Paddock Wood, William Louis King, L.R.C.P., M.R.C.S., aged 70 years.

QUICKE.—On Jan 20th, at the Dood's-road Nursing Home, Reigate, William Henry Quicke, F.R.C.S., Lieutenant-Colonel, I.M.S. (retired), aged 58 years.

ROBB-SMITH.—On Dec. 15th, 1917, in hospital, Alec Robb-Smith, Captain, R.A.M.C.

ROBERTS.—On Jan. 14th, at Sion Hill, Garstang, Henry Roberts, M.R.C.S., L.R.C.P. Lond., M.D. Brux., aged 56 years.

WINSLOW.—On Jan. 19th, suddenly, Henry Forbes Winslow, M.D., M.R.C.S., M.R.C.P., Eaton-place, Brighton, aged 83 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

COUNTRY LIFE OFFICES, 20, Tavistock-street, Covent Garden, W.C.
The Western Front: One Hundred Drawings. By Muirhead Bone. Vol. II. 15s. net.

HEINEMANN, WILLIAM, London.
Acute Poliomyelitis. By George Draper, M.D. With foreword by Simon Flexner. 7s. 6d. net.
Modern Dental Materia Medica, Pharmacology, and Therapeutics, including the Practical Application of Drugs and Remedies in the Treatment of Disease. By J. P. Buckley, Ph.G., D.D.S. Fourth edition, revised. 18s. net.

LEWIS, H. K., AND CO., London.
Glaucoma: A Text-book for the Student of Ophthalmology. By R. H. Elliott, M.D., B.S. Lond., Sc.D. Edin., F.R.C.S. Eng., Lt.-Col., I.M.S. retd. 21s. net.

SAUNDERS (W. B.) COMPANY, London and Philadelphia.
A Text-book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D., Professor of Medicine and Clinical Medicine, Medico-Chirurgical College Graduate School, University of Pennsylvania. Thirteenth edition, thoroughly revised with the assistance of John H. Musser, jr., M.D., Associate in Medicine, University of Pennsylvania. 28s.
Illustrated Medical Dictionary (Dorland). A new and complete Dictionary of Terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred branches; with new and elaborate tables. Ninth edition, revised and enlarged. Edited by W. A. Newman Dorland, M.D. Containing over 2000 new terms. Flexible leather, 21s. net.

SKEFFINGTON AND SON, London.
The Cult of Old Paintings and the Romney Case. By Rickard W. Lloyd. With a foreword by Sir Edward J. Poynter, Bart., K.C.V.O., P.R.A. 6s. net.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, Jan 31st.—Papers:—Mr. A. Mallock: The Growth of Trees.—Prof. B. Moore and Mr. T. A. Webster: Action of Light Rays on Organic Compounds and the Photo-synthesis of Organic from Inorganic Compounds in Presence of Inorganic Colloids.—Capt. W. J. Tulloch, R.A.M.C.: The Isolation and Serological Differentiation of Bacillus Tetani (communicated by Surg.-Gen. Sir David Bruce).—Dr. J. Brownlee: An Investigation into the Periodicity of Measles Epidemics in the Different Districts of London for the years 1890-1912 (communicated by Sir Walter Fletcher).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, Jan. 31st.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Chas. W. Buckley, J. Campbell McClure): at 5.30 P.M.

Paper:

Dr. Percy Lewis (Folkestone): The Mental Factor in Spa Treatment.

(At 7.15 P.M. the members will dine together at Pagani's Restaurant, Great Portland-street, W., and members may bring guests. Members who wish to dine are requested to send their name to Dr. Campbell McClure, 59, Harley-street, W. 1.)

Friday, Feb. 1st.

LARYNGOLOGY (Hon. Secretaries—W. D. Harmer, F. A. Rose): at 4 P.M

Demonstration:

Major H. D. Gillies, R.A.M.C., and Mr. G. Seccombe Hett: Demonstration on Rhinoplasty, illustrated by cases and epidiascope.

Cases:

Will be shown by Dr. A. Wylie, Mr. W. M. Mollison, Mr. C. H. Hayton, Dr. Jobson Horne, Mr. J. Gay French, Mr. E. D. D. Davis.

N.B.—Owing to the urgent need of Food Economy, no Refreshments will be served at Meetings after Feb. 1st.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W. 1.

MONDAY.—8.30 P.M., Papers:—Major W. Broadbent, R.A.M.C.(T.): Interlobar Empyema and other Surgical Complications of the Thorax.—Dr. H. A. Des Vœux: The Symptoms of Eye Strain as met with in General Practice (Analysis 100 cases).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Ten Lectures on the Anatomical and Physiological Principles underlying the Treatment of Injuries to Muscles, Joints, and Bones:

MONDAY.—5 P.M., Lecture VII.:—Prof. A. Keith: Specimens illustrating Necrosis and Reproduction of Bone from the Army Medical Collection.

WEDNESDAY.—5 P.M., Lecture VIII.:—Prof. A. Keith: Specimens recently added to the Army Medical Collection.

FRIDAY.—5 P.M., Lecture IX.:—Prof. A. Keith: Specimens recently added to the Army Medical Collection.

The Lectures will be illustrated by specimens from the Army Medical Collection now on exhibition in the Museum and also by specimens from the College Collection.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. 15

MONDAY.—2.30 P.M., Children's Diseases: Dr. T. R. Whipham. Gynæcological Diseases: Mr. F. L. Provis. Surgical Operations: Mr. E. Gillespie. 3 P.M., Medical In-patients: Dr. R. M. Leslie. 7 P.M., Venereal Clinic: Dr. Kinsella.

TUESDAY.—10 A.M., Surgical Operations: Mr. J. Howell Evans. 2.30 P.M., Medical Out-patients: Dr. A. G. Auld. Surgical Out-patients: Mr. Howell Evans. Nose, Ear, and Throat Diseases: Mr. C. H. Hayton. X Rays: Dr. Metcalfe. 3.30 P.M., Medical In-patients: Dr. A. J. Whiting.

WEDNESDAY.—2.30 P.M., Medical Out-patients: Dr. T. R. Whipham. Diseases of the Skin: The Dermatologist. Eye Diseases: Mr. A. S. Worton. Operations:—Nose, Ear, and Throat: Mr. Hayton; 4 P.M., Eyes: Mr. Worton. 5 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

THURSDAY.—2.30 P.M., Medical Out-patients, Dr. A. J. Whiting. Surgical: Mr. H. W. Carson. X Rays: Dr. Metcalfe. Gynæcological Operations: Dr. A. H. Giles. 3.30 P.M., Medical In-patients: Dr. R. M. Leslie.

FRIDAY.—2.30 P.M., Surgical Out-patients: Mr. Gillespie. Eye Diseases: Mr. A. S. Worton. 7 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

SATURDAY.—2.30 P.M., Surgical Operations: Mr. H. W. Carson.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—5 P.M., Dr. W. K. Sibley: Alopecia and its Treatment.

THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Diagnosis and Treatment of the late Eruptions of Syphilis.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C. 1.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY.—4 P.M., Lecture III.:—Prof. G. E. Smith: The Reform of the Treatment of Mental Disorder.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

We cannot undertake to return MSS. not used.

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The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 23rd, 1918.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 17	0·19	49	49	30	35	35	Snowing
" 18	0·26	59	53	34	47	48	Raining
" 19	0·37	57	52	44	48	49	Overcast
" 20	0·01	59	56	43	49	51	Cloudy
" 21	0·01	76	51	43	47	49	Fine
" 22	0 07	72	52	43	47	48	Cloudy
" 23	0·04	61	53	43	47	48	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Dr. J. B. Hurry (Westfield, Reading) writes signifying his willingness to present a copy of his book entitled "The Ideals and Organisation of a Medical Society" to the library of any medical society that would like to possess it.

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Ceylon.—The Ceylon Blue-Book for 1916 has just been presented to both Houses of the Imperial Parliament. It states that at the end of the year the population (exclusive of the military and shipping) was estimated to be 4,547,200, an increase of nearly 122,900 on that of the previous year, due to an excess of about 54,800 births over deaths, and 68,100 arrivals over departures of Indian coolies. To every 100 females there are 113 males in Ceylon.

The birth-rate for the year was 39 per 1000 of the population and was the highest recorded during the past 5 years, and the average rate for the past decade was 37·3; there were 105 male to every 100 female births. The death-rate was 28·8 per 1000 of the population. The tea, rubber, and cocoa estates at the end of the year contained a population of about 766,700, mostly Tamil immigrants from Southern India; the death-rate in the estates was 38·4 per 1000. The proportion of deaths in the general community from certain principal causes to a million of the estimated population was as follows: infantile convulsions, 3029; diarrhœa, 2473; bronchitis and pneumonia, 1289; phthisis and other forms of tuberculosis, 953; dysentery, 816; ankylostomiasis, 559; malaria and malarial cachexia, 420; premature birth and congenital defects, 342; enteric fever, 127; and cancer, 94. Plague was responsible for 285 deaths, more than double the number recorded in 1915. Ninety-eight deaths per million were due to accidental drowning, 83 to falls from trees, and 49 to snake-bite; 50 deaths per million were attributed to suicide, 38 to homicide, and 6 to judicial executions. Instead of the succeeding years showing a diminution of the virulence of plague, as was hoped might be the case, the contrary has been experienced. Thus the total case mortality, which was 92·2 per cent. in 1914, was 92·8 per cent. in 1915 and 93·8 per cent. in 1916. As in the two previous years, the largest number of cases occurred amongst young adults, males being attacked more frequently than females. The chief focus of infection as regards both rat and human plague continues to be in the Sea-street area. This is probably associated with (*a*) the existence of an old system of underground insanitary rain-water drains which are infested with rats, and (*b*) the fact that the bulk of the private wholesale grain-stores, in none of which has any attempt at rat-proofing been made, are situated within this area. As regards the other centres of infection, there is one striking feature common to them all—viz., the existence of crowded insanitary tenements, which are invariably found to be infested with rats. The same preventive measures as hitherto were carried out, reliance being placed chiefly upon isolation of patients in hospital, segregation of contacts, evacuation of insanitary tenements in infected localities pending the carrying out of structural improvements, pesterining of infected and adjoining houses, and capture and destruction of rats, including trapping, poisoning, and fumigation of rat-runs by Clayton machines, six of which are now in use. Anti-plague vaccination proved to be so unpopular that it has practically been abandoned, and the stock of serum which was obtained by the municipality from Bombay has had to be destroyed. The comparative absence of the usual signs of an epizootic amongst the rats was again a striking feature, but the very limited amount of work which has been possible in the matter of opening up rat-runs indicates that most of the affected rats die within and remain concealed in their runs.

There are in Ceylon 81 Government hospitals, in addition to the lunatic and leper asylums, equipped with modern hospital and surgical appliances; in addition to the hospitals there are 432 Government outdoor dispensaries. The owners of estates have provided 55 estates hospitals and 375 dispensaries. Three new hospitals and five central dispensaries were opened during the year in the various provinces; several additional hospitals are still under construction, including a tuberculosis hospital at Ragama and a sanatorium at Kandana.

The general rebuilding scheme in contemplation for the improvement of the Medical College has had to be deferred. The full course of training for medical students is five years. A diploma in medicine, surgery, and midwifery (which can be registered in the United Kingdom) is granted to successful medical students. The course of training for apothecaries is two years; on obtaining their qualifications they are employed by Government. During the past two years there have been 20 passes in medicine and 34 as apothecaries. In Colombo there are a bacteriological institute, a general hospital, a lunatic asylum, an ophthalmic hospital, a lying in home, a hospital for women and children, and one for infectious diseases. There is an establishment for the manufacture of calf lymph; there are special dispensaries at Kandy and Galle for the treatment of eye diseases. An anti-tuberculosis institute in Colombo was opened during the year, fitted with an up-to-date X ray apparatus.

The Leper Asylum, situated six miles from Colombo, contained 419 patients at the end of the year; the total treated during 1916 numbered 497. A small establishment for lepers exists at Kalmunai in the Eastern Province, with accommodation for 30, and a leper colony at Mantivu, a small island on the lagoon in the neighbourhood of Batticaloa, is being provided. A home for incurables (containing 80 beds) is administered by a committee of Government officials and representatives of the public. A campaign against ankylostomiasis has been started, with the help of the Rockefeller Foundation, in the Matale, Dikoya, and Bogawantalawa districts.

To prevent the "cocaine habit" spreading in Ceylon new excise notifications regulating the importation, fees, periods, restrictions, conditions, and forms of licence for the sale and possession of cocaine have been passed. The regulations affecting its possession and sale by medical practitioners are so framed as to allow a *modus operandi* in their case. Stringent measures have also been taken to put down the use of every part of the hemp plant (*Cannabis indica* or *sativa*) in forms commonly known as

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Y.—Mr J. B. Yelf, Shipston-on-Stour.

(*Continued at foot of next page.*)

ganja and bhang. The regulations as they now stand prohibit this drug, with exceptions in favour of corn paints, corn plasters, bromidia, chlorodyne, and tinctura chloroformi et morphinæ composita.

Malta.—Reporting on the Blue-book for the year 1916–17 the Chief Secretary states that the civil population is estimated at 223,741. The birth-rate was 29·99 per 1000, as compared with an average for the past ten years of 34·22 per 1000. The death-rate was 22·35 per 1000, as compared with a ten years' average of 22·81. The death-rate of children under 12 months was 253·80 per 1000 births, and of children under 5 years 105·80 per 1000. The general state of health was satisfactory. The number of patients admitted into the hospitals of Malta and Gozo during the year was 3997, and 144,761 persons were attended by the district medical officers at the Government dispensaries or at their own residences. The number of inmates in the Leper Hospital was 114. An incident of importance for the Colony has been the establishment in Malta of a large military hospital base, and the organisation of the numerous hospitals was facilitated by the ready manner in which buildings, both public and private, were placed at the disposal of the military authorities for this purpose.

AN IMPROVED BANDAGE FASTENER.

THE puttee and bandage fastener devised by Dr. C. E. Reinhardt-Rutland, and described in THE LANCET of July 10th, 1915, has been improved by the inventor. The new form, which is specially designed for bandages, is like a very short hairpin, the ends being sharpened to a fine point and turned outwardly at right angles in the same plane as that of the wires of the pin. The bandage having been placed in position, the pin is inserted in the loose end of the bandage, which is then drawn up to the bend of the pin. The two legs of the pin are afterwards slightly pressed together and one point inserted in the body of the bandage. The other point is pressed on to the bandage and becomes fixed on releasing the tension on the two legs. The manipulation takes less time than in the case of a safety-pin, and requires the use of one hand only. The price is 10*d.* or 1*s.* per box of three dozen, according to size. The makers are Messrs. Allcock and Co., Redditch.

RHODODENDRON POISONING IN SHEEP.

LAST week in a Midland district a flock of sheep, attracted, no doubt, by the opportunity of adding to a scanty diet, were poisoned by eating rhododendron leaves. Four of their number died, eight were killed, the remainder recovering. In connexion with those which were killed the important point of the suitability of the flesh for human consumption was submitted to the medical officer of health for decision. It appears that the leaves of several species of rhododendron possess toxic properties. *R. ponticum*, the common form of our woods and shrubberies, is stated to be among the plants whose nectar renders the honey of Trebizond poisonous. The leaves of the less common *R. chrysanthemum*, a yellow species with a sweet smell, are known to be narcotic since the observation of Stetter, a Russian botanist, that a tame deer became seriously intoxicated by browsing on the leaves, and after recovery refused to touch the leaves again. Stetter's servants, however, benefited by the lesson and intoxicated themselves with the leaves without obvious ill-effects. In practice it is pretty clear that no danger to human beings results from consuming the flesh of animals which have browsed on rhododendron provided that the flesh is otherwise suitable for food.

THE SOCIAL STUDY SCHOOL FOR MEDICAL STUDENTS AT MANSFIELD HOUSE.

THE attendance was not a large one at the social study school arranged by the Mansfield House University Settlement (Canning Town, London, E.), in conjunction with the Student Christian Movement and held over the week-end Jan. 4th–7th, but a representative group of a dozen London medical students, men and women, attended, and opportunity was given them of gaining an intimate, and to some extent first-hand, insight into the social conditions of the neighbourhood, which form the background of working-class medical practice, and into the principles regulating these conditions.

Mr. H. A. Mess, B.A., secretary of the settlement, opened with an analysis of poverty; Dr. P. I. Watkin lectured on the health of the district; and Dr. Sidney Davies outlined the social work of the medical officer of health. Addresses were also given by Dr. Jane Walker and Dr. S. R. Gloyne on the physical factors making for a healthy nation and the spiritual ideals required for the purpose, and by members of local authorities on their own particular aims and difficulties. The school may be regarded as successful in its object, and the settlement proposes to repeat the experiment if there is sufficient demand for it on the part of medical students.

R. M.—Many forms of antiseptic gas have been tried in the treatment of wounds for half a century. The substitution of hot oxygen for hot air in the sterilisation of gangrenous wounds was described by M. Vignat in our Paris Correspondence (THE LANCET, 1915, i., 1306).

Aberdeen.—The reply of the clerk to the Insurance Committee appears to be quite correct. Persons are admitted to insurance now at any age earlier than 70. At 70 they cease to pay contributions and are no longer entitled to sickness or disablement benefit. They remain, however, entitled to medical benefit subject to the condition that they shall have paid more than 26 contributions prior to reaching the age of 70.

(*Continued from previous page.*)

Letters, each with enclosure, are also acknowledged from—

A.—Lieut. F. M. Auld, R.A.M.C.; Alnwick Infirmary, Sec. of; Dr. Amorim, Rio Man; A. R. M.; Capt. W. H. Anderson, R.A.M.C.; Capt. B. Ash, R.A.M.C.; Messrs. J. and W. Arrowsmith, Bristol; Aberdeen Royal Infirmary, Sec. of; Anglo-American Pharmaceutical Co., Croydon.

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